



workbook

modern school mathematics

structure and use

revised edition

Duncan
Capps
Dolciani
Quast
Zweng

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REVISED EDITION

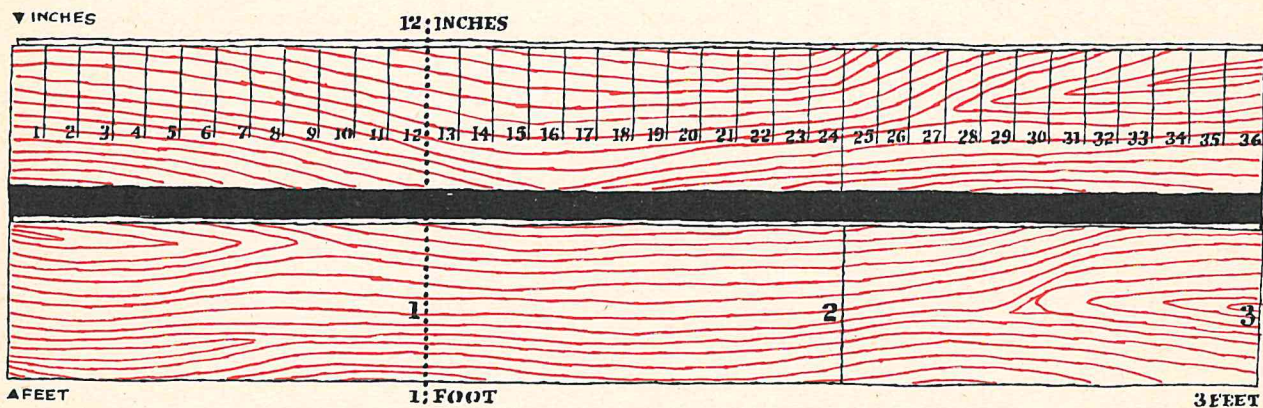
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Contents

1	Sets, numbers, numerals / pages 1–28*	1
2	Addition, subtraction, multiplication, division / pages 29–60	10
3	Multiplication and division / pages 61–92	19
4	Geometry / pages 93–124	28
5	Fractional numbers / pages 125–156	36
6	Number theory / pages 157–188	44
7	Addition, subtraction with fractional numbers / pages 189–220	53
8	Statements / pages 221–252	62
9	Multiplication, division with fractional numbers / pages 253–288	71
10	Geometry / pages 289–316	79
11	Different ways with numbers, integers / pages 317–332	87

**Pages refer to the Student Text.*

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chapter 1

Name _____

sets, numbers, numerals

Sets — Subsets

List the members of each set.

1. {vowels} _____
2. {odd numbers less than 10} _____
3. {teachers in your room} _____

Describe each set.

4. {January, February, March, April} _____
5. {a, b, c, d, . . . , y, z} _____

Tell whether each set is finite or infinite.

- | | |
|--------------------------|-----------------------------|
| 6. _____ all numbers | 9. _____ students in school |
| 7. _____ even numbers | 10. _____ odd numbers |
| 8. _____ hours in a year | 11. _____ cars in your city |

Write two subsets of each set.

silverware

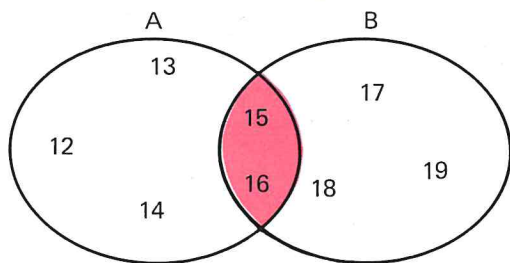
cars

animals

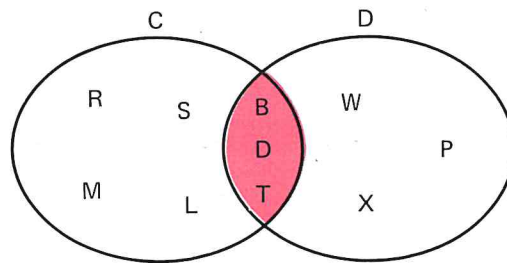
- | | | |
|-------------|-------------|-------------|
| 12. {_____} | 14. {_____} | 16. {_____} |
| 13. {_____} | 15. {_____} | 17. {_____} |

Intersection and Union of Sets

Use the diagram to help you name the set.



1. $A = \{ \dots \}$
2. $B = \{ \dots \}$
3. $A \cap B = \{ \dots \}$
4. $A \cup B = \{ \dots \}$

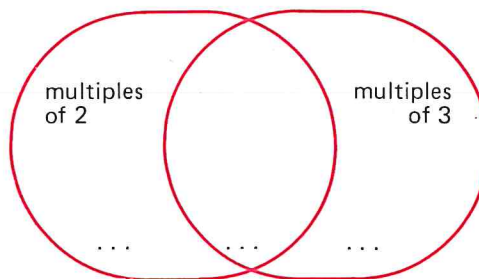


5. $C = \{ \dots \}$
6. $D = \{ \dots \}$
7. $C \cap D = \{ \dots \}$
8. $C \cup D = \{ \dots \}$

Complete the diagram.

9. Multiples of 2 $\{0, 2, 4, 6, 8, 10, \dots\}$
 Multiples of 3 $\{0, 3, 6, 9, 12, 15, \dots\}$

10. The intersection can be described
 as
11. The ... at the end tells that the set is



Name the union of each pair of sets.

12. $L = \{\text{even numbers between 3 and 10}\}$
 $M = \{\text{whole numbers between 5 and 12}\}$

$$L \cup M = \{ \dots \}$$

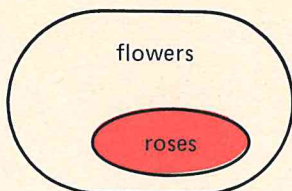
13. $N = \{\text{whole numbers between 8 and 12}\}$
 $O = \{\text{odd numbers less than 10}\}$

$$N \cup O = \{ \dots \}$$

Name _____

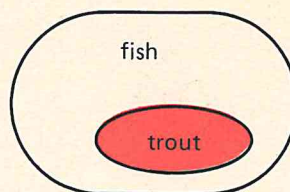
All — If-then

Write an *All* and an *If-then* statement about each diagram.



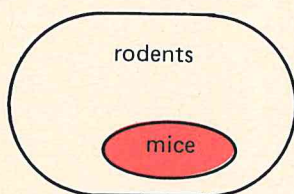
1. If _____

2. All _____



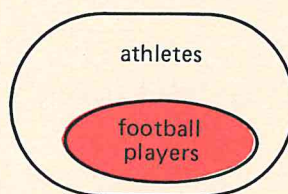
5. If _____

6. All _____



3. If _____

4. All _____



7. If _____

8. All _____

Draw a diagram to illustrate the first sentence, then complete the second sentence.

9.

All rain is liquid.

11.

If something is an orange, then it is fruit.

10. _____ is a subset of _____.

12. _____ is a subset of _____.

Universal Set

Name a universal set for each.

Universal Set

1. $U = \{\text{canoe, sailboat, yacht}\}$ {_____}
2. $N = \{\text{football, basketball, baseball}\}$ {_____}
3. $I = \{\text{pencil, pen, chalk}\}$ {_____}
4. $V = \{\text{Kansas, Wisconsin, California}\}$ {_____}
5. $E = \{\text{cow, horse, sheep}\}$ {_____}
6. $R = \{0, 2, 4, 6, 8, 10, \dots\}$ {_____}
7. $S = \{\text{celery, pear, carrot}\}$ {_____}
8. $A = \{\text{roses, petunias, pansies}\}$ {_____}
9. $L = \{\text{Amazon, Mississippi, Nile}\}$ {_____}

Name a subset from U that will make the sentence true.

10. $U = \{\text{whole numbers}\}$ _____ numbers are divisible by 2.
11. $U = \{\text{things that fly}\}$ _____ travel fast.
12. $U = \{\text{subjects in school}\}$ _____ is studied by students in the elementary school.
13. $U = \{\text{polygons}\}$ _____ have four right angles.
14. $U = \{\text{closed curves}\}$ _____ are formed with line segments.
15. $U = \{\text{quadrilaterals}\}$ _____ are quadrilaterals.

Write $>$, $=$, or $<$ in the \bigcirc to make a true sentence.

1. $5 + 8 \bigcirc 16$

5. $4 \times 13 \bigcirc 42$

2. $62 - 5 \bigcirc 58$

6. $17 \times 3 \bigcirc 18 \times 2$

3. $4 + 13 \bigcirc 13 + 4$

7. $48 \div 12 \bigcirc 36 \div 9$

4. $5 \times 28 \bigcirc 28 \times 5$

8. $10 \times 83 \bigcirc 803$

Replace the underlined word to make a true sentence. Then name your universal set.

Universal Set

9. It is eaten. _____

{_____}

10. It is an odd number. _____

{_____}

11. She is a famous person. _____

{_____}

12. He is a famous athlete. _____

{_____}

13. It is a dog. _____

{_____}

Replace the letter with numerals from the set on the right to solve the inequality.

14. $n < 6$ _____

{3, 4, 5, 6, 7, 8, 9}

15. $n > 4$ _____

{0, 1, 2, 3, 4, 5, 6}

16. $(3 \times n) < 9$ _____

{2, 4, 6, 8, 10, 12}

17. $(12 \div n) > 2$ _____

{2, 4, 6, 8, 10, 12}

18. $(18 - n) > 12$ _____

{0, 1, 2, 3, 4, 5, 6}

19. $(14 + n) < 20$ _____

{0, 1, 2, 3, 4, 5, 6}

20. $(3 \times n) < 30$ _____

{1, 3, 5, 7, 9, 11}

Numeration — Exponents

Write the expanded numeral.

1. $2987 = \text{-----} + \text{-----} + \text{-----} + \text{-----}$

2. $5865 = \text{-----} + \text{-----} + \text{-----} + \text{-----}$

Write the exponent.

3. $10^{\square} = 100$

6. $10^{\square} = 1000$

9. $10^{\square} = 1 \text{ million}$

4. $8^{\square} = 512$

7. $3^{\square} = 81$

10. $10^{\square} = 1 \text{ thousand}$

5. $10^{\square} = 1,000,000$

8. $4^{\square} = 256$

*11. $10^{\square} = 1 \text{ billion}$

Complete the equation.

12. $10^2 + 10^1 + 1 = \text{-----}$

14. $(8 \times 10^2) + (8 \times 10^1) + 8 = \text{-----}$

13. $(3 \times 10^2) + 3 = \text{-----}$

15. $(6 \times 10^2) + (3 \times 10^1) + 6 = \text{-----}$

Use exponents to write

16. 576 billion (576×10^9) -----

20. 324 million -----

17. 372 thousand -----

21. 43 billion -----

18. 32 thousand -----

22. 21 million -----

19. 7 million -----

23. 8 billion -----

Name _____

Ordering — Rounding

Round each number to the nearest hundred and nearest thousand.

1. 7852

-----, -----

3. 6375

-----, -----

5. 2728

-----, -----

2. 9276

-----, -----

4. 6497

-----, -----

6. 9823

-----, -----

Try This!

To round a number to the nearest 100:

Consider 835. Think: the numeral to the right of the hundreds' place is less than 5 so we round down. 800.

Consider 875. Think: the numeral to the right of the hundreds' place is greater than 5, so we round up. 900.

Round to the nearest 100, then add the rounded numbers.

7. $896 + 324$

----- + ----- = -----

10. $736 + 495$

----- + ----- = -----

8. $624 + 341$

----- + ----- = -----

11. $565 + 487$

----- + ----- = -----

9. $136 + 687$

----- + ----- = -----

12. $574 + 696$

----- + ----- = -----

*Round to the nearest million.

13. 32,783,496

14. 521,347,293

15. 2,738,692

16. 597,236,424

Units of Measure

Name the quantity.

1. 36 inches: feet or yard
2. 8 pints: quarts or gallon
3. 16 ounces: pound
5. 1000 grams: kilogram
4. 100 centigrams: gram
6. 100 centimeters: meter

Name the quantity.

7. 3 meters: centimeters
10. 7 grams: centigrams
8. 5 pounds: ounces
11. 10,000 grams: kilograms
9. 5 grams: centigrams
12. 6 gallons: quarts

Write an equation to change the measure.

13. 9 feet 3 inches to inches. $(9 \times 12) + 3 =$

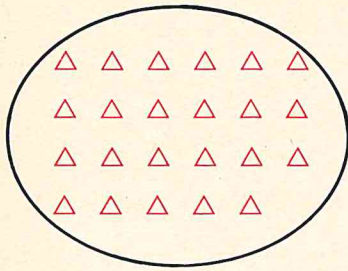
14. 48 inches to feet. $(48 \div 12) =$

15. 72 inches to yards. -----
16. 6 pounds and 4 ounces to ounces. -----
17. 900 centimeters to meters. -----

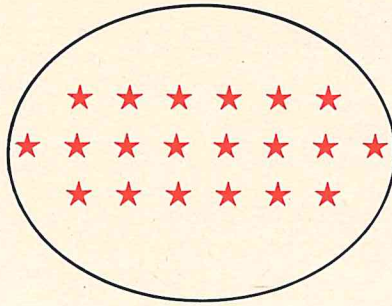
Name _____

Bases — Roman Numerals

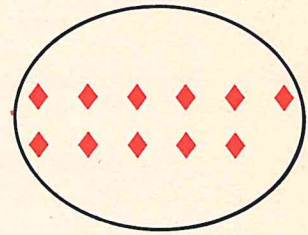
Ring the sets of eight, then write a base eight numeral for the number of objects in each set.



1. -----eight



2. -----eight



3. -----eight

Write a base eight numeral for each base ten numeral.

4. $13_{\text{ten}} =$ -----eight

5. $16_{\text{ten}} =$ -----eight

6. $64_{\text{ten}} =$ -----eight

Write the decimal numeral.

7. I = -----

9. V = -----

11. X = -----

13. L = -----

8. C = -----

10. D = -----

12. M = -----

14. CM = -----

Answer with Roman numerals.

15. How many days in a week? -----

16. How many inches in 1 yard? -----

17. Rename 7×7 -----

18. How many ounces in 1 pound? -----

19. How many pints in 1 gallon? -----

20. What numeral follows 98? -----

Use Roman numerals to name the cardinal number of each set.

21. {days in a year} -----

24. {minutes in 1 hour} -----

22. {hours in a day} -----

25. {years in a decade} -----

23. {weeks in a year} -----

26. {points for 1 touchdown} -----

chapter 2

addition, subtraction, multiplication, division

Basic Properties of Addition

Use the commutative property to rewrite the sum.

1. $6 + 3 + 4 =$

$6 + \text{-----} + 3 = \text{-----}$

2. $9 + 8 + 1 =$

$9 + \text{-----} + 8 = \text{-----}$

3. $3 + 9 + 7 =$

$3 + \text{-----} + 9 = \text{-----}$

4. Can you explain why the rewritten sum might be easier?

Use the associative property to rewrite each sum.

5. $6 + (3 + 8) =$

$(6 + 3) + 8 = \text{-----}$

6. $5 + (4 + 9) =$

$\text{-----} = \text{-----}$

7. $4 + (5 + 7) =$

$\text{-----} = \text{-----}$

8. Can you explain why the rewritten sum might be easier?

Name the sum.

9.
$$\begin{array}{r} 9 \\ 3 \\ +2 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 4 \\ 5 \\ +6 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 7 \\ 4 \\ +3 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 8 \\ 3 \\ +8 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 7 \\ 7 \\ +3 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 6 \\ 9 \\ +4 \\ \hline \end{array}$$

Try This!

15. $6 + 7 + 8 = \text{-----}$ or $3 \times 7 = \text{-----}$

16. $7 + 9 + 11 = \text{-----}$ or $\text{-----} = \text{-----}$

17. $3 + 4 + 5 + 6 + 7 + 8 + 9 = \text{-----}$ or $\text{-----} = \text{-----}$

Name _____

Practicing Addition**Expanded form**

$$\begin{array}{r} 600 + 30 + 8 \\ + 200 + 20 + 6 \\ \hline 800 + 50 + 14 = 864 \end{array}$$

4-step form

$$\begin{array}{r} 638 \\ + 226 \\ \hline 14 \\ 50 \\ 800 \\ \hline 864 \end{array}$$

Short form

$$\begin{array}{r} 1 \\ 638 \\ + 226 \\ \hline 864 \end{array}$$

Name the sum.

1.
$$\begin{array}{r} 63 \\ + 84 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 72 \\ + 56 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 43 \\ + 24 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 96 \\ + 48 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 243 \\ + 324 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 635 \\ + 248 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 796 \\ + 343 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 794 \\ + 389 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 9434 \\ + 1243 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 6381 \\ + 2483 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 7349 \\ + 2769 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 7438 \\ + 2698 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 687 \\ 248 \\ 54 \\ + 311 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 463 \\ 324 \\ 48 \\ + 750 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 496 \\ 387 \\ 246 \\ + 54 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 298 \\ 489 \\ 764 \\ + 464 \\ \hline \end{array}$$

17. Sue read 136 pages one day, 274 pages the next day.

How many pages did she read in the two days? _____

Basic Ideas in Subtraction

Use the commutative property of addition to write the other addition fact. Then write the subtraction equation that "undoes" the addition equation.

1.

$$6 + 9 = 15 \quad 9 + 6 = 15$$

3.

$$7 + 9 = 16 \quad \text{-----}$$

2.

$$5 + 6 = 11 \quad \text{-----}$$

4.

$$8 + 7 = 15 \quad \text{-----}$$

Write $<$, $>$ or $=$ in the \bigcirc to make the sentence true.

5. $16 - 8 \bigcirc 17 - 9$

8. $14 - 5 \bigcirc 12 - 6$

11. $13 - 8 \bigcirc 15 - 9$

6. $18 - 9 \bigcirc 16 - 8$

9. $14 - 7 \bigcirc 16 - 5$

12. $13 - 9 \bigcirc 14 - 9$

7. $17 - 9 \bigcirc 12 - 3$

10. $14 - 5 \bigcirc 13 - 6$

13. $11 - 3 \bigcirc 16 - 7$

Complete the sentence.

14. Joining sets suggests -----.

15. Separating sets suggests -----.

16. Addition and subtraction are ----- operations.

Name the missing addend.

17. $\begin{array}{r} 63 \\ - 29 \\ \hline \end{array}$

18. $\begin{array}{r} 784 \\ - 386 \\ \hline \end{array}$

19. $\begin{array}{r} 774 \\ - 369 \\ \hline \end{array}$

20. $\begin{array}{r} 587 \\ - 496 \\ \hline \end{array}$

21. $\begin{array}{r} 5434 \\ - 2798 \\ \hline \end{array}$

Name _____

Properties in Multiplication

1. The associative property of multiplication says that the way the numbers are grouped does not change the _____.
2. The distributive property says that multiplying the sum of two addends gives the same result as multiplying each addend by the number and _____ the products.

Use () to show how you would group the addends or factors.
Then complete the equations.

3. $2 + (2 + 4) = 2 + 6 = \underline{\hspace{2cm}}$

4. $1 + 4 + 5 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

5. $7 + 9 + 6 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

6. $3 \times 4 \times 2 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

7. $9 \times 2 \times 5 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

8. $2 \times 7 \times 10 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

The following exercises show how the distributive property is used. Complete the equations.

9. $(7 \times 4) + (2 \times 4) = (7 + 2) \times 4 = \underline{\hspace{2cm}} \times 4 = \underline{\hspace{2cm}}$

10. $(6 \times 3) + (6 \times 5) = (\underline{\hspace{2cm}} + \underline{\hspace{2cm}}) \times 6 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

11. $(2 \times 5) + (2 \times 9) = (5 + 9) \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

12. $320 \times 3 = (300 + 20) \times 3 = (300 \times 3) + (\underline{\hspace{2cm}} \times 3) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

13. $430 \times 5 = (\underline{\hspace{2cm}} + 30) \times 5 = (\underline{\hspace{2cm}} \times 5) + (30 \times 5) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

14. $160 \times 7 = (100 + \underline{\hspace{2cm}}) \times 7 = (100 \times \underline{\hspace{2cm}}) + (60 \times \underline{\hspace{2cm}})$
 $= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Practice with Multiplication

Name the products using the 3-step method shown in the first exercise.

$$\begin{array}{r} 1. \quad 42 \\ \times 27 \\ \hline 294 \\ 840 \\ \hline 1134 \end{array}$$

$$\begin{array}{r} 2. \quad 63 \\ \times 57 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 94 \\ \times 38 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 56 \\ \times 85 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 49 \\ \times 54 \\ \hline \end{array}$$

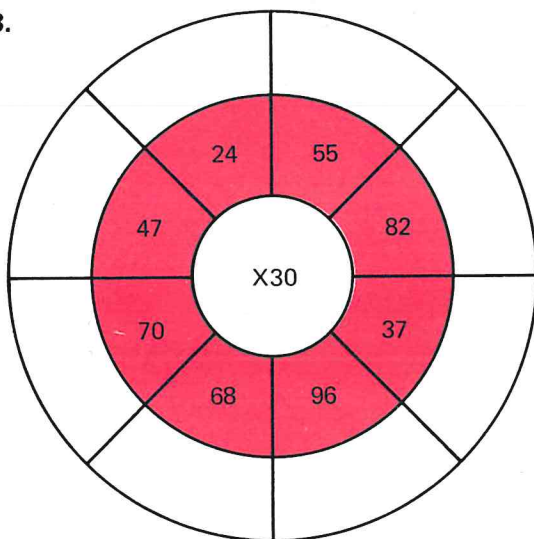
Complete these exercises.

$$6. \quad \begin{array}{r} 56 \\ \times 24 \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline \begin{array}{r} 56 \\ \times 20 \\ \hline \end{array} & & \begin{array}{r} 56 \\ \times 4 \\ \hline \end{array} \\ \hline \end{array} + \begin{array}{r} \\ \\ \hline \end{array} = $$

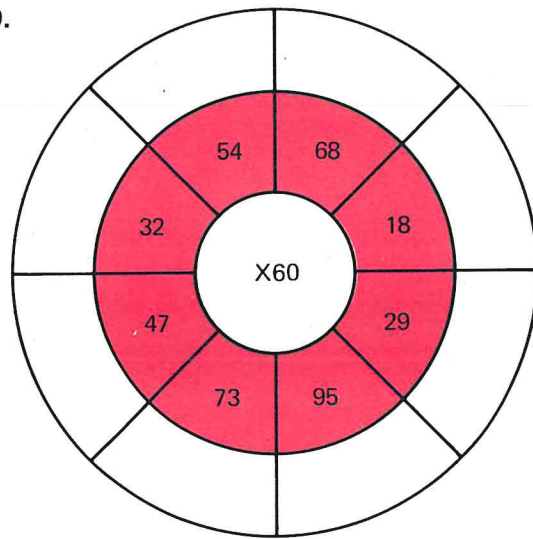
$$7. \quad \begin{array}{r} 63 \\ \times 48 \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline \begin{array}{r} 63 \\ \times 40 \\ \hline \end{array} & & \begin{array}{r} 63 \\ \times 8 \\ \hline \end{array} \\ \hline \end{array} + \begin{array}{r} \\ \\ \hline \end{array} = $$

Complete each pattern by naming the product of the factors.

8.



9.



Solve the equation.

$$10. (20 \times 32) + (6 \times 32) = \times 32$$

$$ + = $$

$$11. (30 \times 14) + (4 \times 14) = \times 14$$

$$ + = $$

Name _____

Functions — Rates

Write a function rule for each set of numbered pairs.

$\{(3, 24), (6, 48), (2, 16)\}$

$\{(5, 45), (3, 27), (7, 63)\}$

$\{(4, 28), (3, 21), (6, 42)\}$

1. _____

2. _____

3. _____

Write a function rule for each rate.

4. 8 cents per letter

7. 6 people per car

10. 42¢ per item

$$8 \times l = n$$

5. 12 inches per foot

8. 4 quarts per gallon

11. 2 pints per quart

6. 3 feet per yard

9. 60 minutes per hour

Complete the table.

12. Rate: 6¢ per gallon

$$6 \times g = c$$

Gallons	1	8	4	9	7	3				20	30
Cents	6						12	60	30		

13. Rate: 4 quarts per gallon

$$4 \times g = q$$

Gallons	1	6	3	9	7	5	8			
Quarts	4							16	8	100

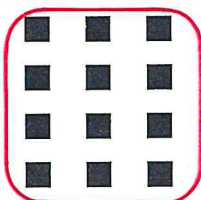
Try This!

14. 5 hours 250 miles Rate: _____ miles per hour.

15. 7 items \$28.00 Rate: _____ dollars per item.

16. 3 days 2100 miles Rate: _____ miles per day.

Basic Properties of Division



3 sets of 4 make a set of 12.

$$3 \times 4 = 12$$

4 sets of 3 make a set of 12.

$$4 \times 3 = 12$$

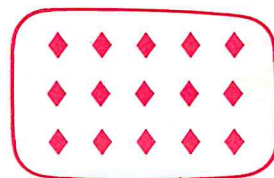
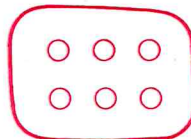
12 separated into 3 subsets with 4 per subset

$$12 \div 3 = 4$$

12 separated into 4 subsets with 3 per subset

$$12 \div 4 = 3$$

For each set write four equations.



1. _____

5. _____

9. _____

2. _____

6. _____

10. _____

3. _____

7. _____

11. _____

4. _____

8. _____

12. _____

Name the missing factor.

13. $63 \div 9 =$ _____

15. $72 \div 8 =$ _____

17. $6 \times$ _____ $= 54$

14. $49 \div$ _____ $= 7$

16. $36 \div$ _____ $= 9$

18. $4 \times$ _____ $= 32$

Rewrite each equation.

19. $(32 \div 4) + (16 \div 4) =$ _____ $\div 4$

21. $(14 \div 7) + (35 \div 7) =$ _____ $\div 7$

_____ $+$ _____ $=$ _____

_____ $+$ _____ $=$ _____

20. $(18 \div 6) + (18 \div 6) =$ _____ $\div 6$

22. $(60 \div 3) + (9 \div 3) =$ _____ $\div 3$

_____ $+$ _____ $=$ _____

_____ $+$ _____ $=$ _____

Name _____

Practice with Division

Complete the sentence, then write the working form.

1. In 38 there are _____ sets of 9 and _____ remaining.

$$\begin{array}{r} 4 \\ 9 \overline{)38} \\ \underline{36} \\ 2 \end{array}$$

2. In 45 there are _____ sets of 7 and _____ remaining.

3. In 71 there are _____ sets of 8 and _____ remaining.

Name the quotient and remainder.

4. $7 \overline{)347}$

6. $9 \overline{)327}$

8. $8 \overline{)659}$

10. $6 \overline{)349}$

5. $5 \overline{)436}$

7. $9 \overline{)876}$

9. $6 \overline{)369}$

11. $7 \overline{)497}$

Name the quotient.

12. $4 \overline{)932}$

14. $6 \overline{)852}$

16. $7 \overline{)854}$

18. $6 \overline{)846}$

13. $3 \overline{)732}$

15. $5 \overline{)795}$

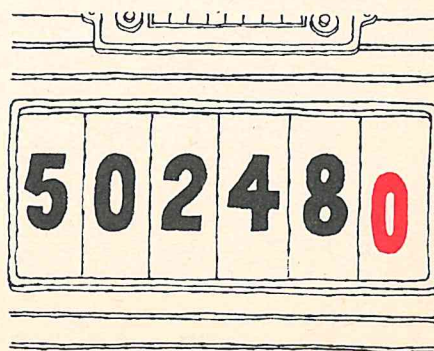
17. $8 \overline{)968}$

19. $4 \overline{)732}$

Solve the problem.

20. In 5 days Mr. Williams drove 660 miles.
About how many miles was that per day? _____

21. In 4 years Mr. Stone drove 50,248 miles.
About how many miles was that per year? _____



Functions — Sequences

Use the function rule to complete the set of ordered pairs.

1. $(3 \times m) + 4$ $\{(5, \text{-----}), (6, \text{-----}), (8, \text{-----}), (2, \text{-----}), (7, \text{-----}), (9, \text{-----})\}$

2. $(7 \times m) - 4$ $\{(2, \text{-----}), (4, \text{-----}), (9, \text{-----}), (8, \text{-----}), (7, \text{-----}), (6, \text{-----}), (3, \text{-----})\}$

3. $(8 \times m) + 5$ $\{(9, \text{-----}), (4, \text{-----}), (7, \text{-----}), (6, \text{-----}), (8, \text{-----}), (5, \text{-----})\}$

Match the expression with the function rule it describes.

4. $f = i \div 12$ -----

a. Changes quarts to gallons

5. $q = 4 \times g$ -----

b. Changes gallons to quarts

6. $d = h \div 24$ -----

c. Changes feet to inches

7. $i = 12 \times f$ -----

d. Changes inches to feet

8. $h = 24 \times d$ -----

e. Changes hours to days

9. $g = q \div 4$ -----

f. Changes days to hours

Continue the sequence to the 12th term.

10. $\{1, 6, 11, 16, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}\}$

11. $\{2, 5, 8, 11, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}\}$

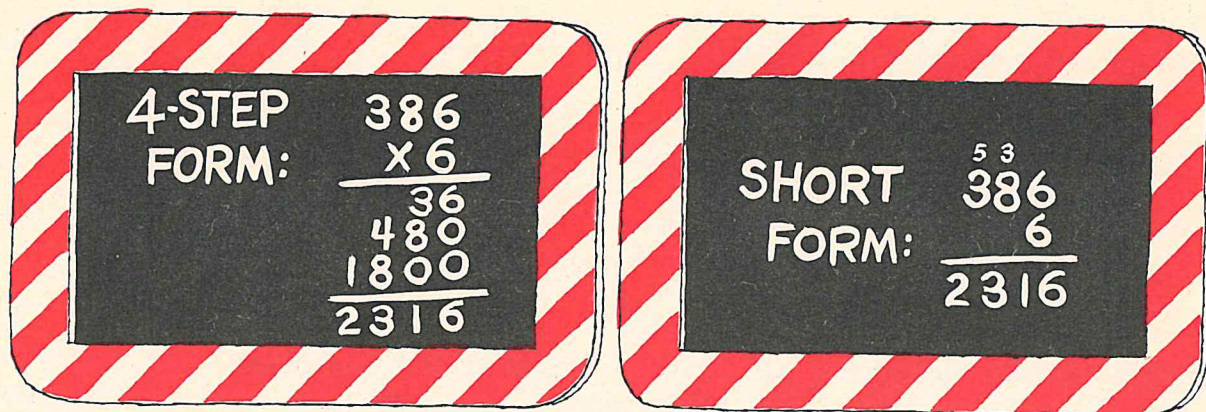
12. $\{3, 6, 12, 24, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}, \text{-----}\}$

chapter 3

Name _____

multiplication and division

Multiplication



Use either method to name the product.

1. $\begin{array}{r} 369 \\ \times 3 \\ \hline \end{array}$

4. $\begin{array}{r} 945 \\ \times 6 \\ \hline \end{array}$

7. $\begin{array}{r} 4732 \\ \times 7 \\ \hline \end{array}$

10. $\begin{array}{r} 684 \\ \times 36 \\ \hline \end{array}$

2. $\begin{array}{r} 847 \\ \times 4 \\ \hline \end{array}$

5. $\begin{array}{r} 438 \\ \times 8 \\ \hline \end{array}$

8. $\begin{array}{r} 9436 \\ \times 4 \\ \hline \end{array}$

11. $\begin{array}{r} 497 \\ \times 27 \\ \hline \end{array}$

3. $\begin{array}{r} 256 \\ \times 7 \\ \hline \end{array}$

6. $\begin{array}{r} 789 \\ \times 6 \\ \hline \end{array}$

9. $\begin{array}{r} 8756 \\ \times 8 \\ \hline \end{array}$

12. $\begin{array}{r} 748 \\ \times 63 \\ \hline \end{array}$

Try This!

13. $3 \times 37 = \text{-----}$

16. $12 \times 37 = \text{-----}$

14. $6 \times 37 = \text{-----}$

17. $15 \times 37 = \text{-----}$

15. $9 \times 37 = \text{-----}$

18. $18 \times 37 = \text{-----}$

Rates

Name the totals.

1. Rate 30¢ per hour 8 hours Total
2. Rate 50 miles per hour 6 hours Total
3. Rate 20 times per day 7 days Total
4. Rate 6 times per week 8 weeks Total
5. When we know the rate we the rate by the number of days, weeks, hours and so on to find the total.

Name the rate.

6. 90 miles in 3 hours Rate miles per hour.
7. 35 times in 7 days Rate times per day.
8. \$8.00 in 4 hours Rate dollars per hour.
9. 24 people in 6 cars Rate people per car.
10. When we know the total and the number of hours, days, and so on, we to find the rate.

Try This! Distance is found by multiplying rate \times time.

11. How would you find rate?
12. How would you find time?

Name _____

Rounding — Estimating

Circle the numeral in the hundreds' place.

1. 4789

2. 6397

3. 4298

4. 6854

5. 7432

Circle the numeral in the tens' place.

6. 7384

7. 6975

8. 4327

9. 2969

10. 7884

Round to the nearest ten and hundred.

6742

4387

845

756

8763

11. _____

13. _____

15. _____

17. _____

19. _____

12. _____

14. _____

16. _____

18. _____

20. _____

Use rounding to estimate the product.

36×48

94×73

689×41

974×84

728×69

21. _____

22. _____

23. _____

24. _____

25. _____

Try This! Estimate the sum by rounding each number to hundreds.

26. 784
 369
 225
 436
 875
 936

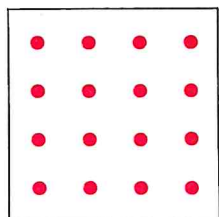
27. 732
 463
 594
 708
 624
 736

28. 987
 432
 697
 424
 536
 475

29. 975
 420
 318
 720
 480
 560

Est. _____

Squaring Numbers



16 dots can be arranged in a square.
Each row and column has 4. We
say we have a 4×4 square.

Ring the numerals that name a number of dots that could be
arranged in a square.

1. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26,
27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48,
49, 50.

For the numerals you marked in Exercise 1 name the number of
dots in each column and row.

2. (1×1) _____

4. _____

6. _____

8. _____

3. _____

5. _____

7. _____

Try This!

$$\begin{array}{r} 75 \\ \times 75 \\ \hline 5625 \end{array}$$

$$\begin{array}{r} 25 \\ \times 25 \\ \hline 625 \end{array}$$

$$\begin{array}{r} 55 \\ \times 55 \\ \hline 3025 \end{array}$$

$$\begin{array}{r} 45 \\ \times 45 \\ \hline 2025 \end{array}$$

$$\begin{array}{r} 65 \\ \times 65 \\ \hline 4225 \end{array}$$

Can you see the pattern for the tens and ones? _____

Can you see the pattern for the hundreds and thousands? _____

Name _____

Division

Study the example.

$$\begin{array}{r}
 2489 \\
 3 \overline{) 7467} \\
 \underline{-6} \\
 14 \leftarrow 7000 - (2000 \times 3) = 1000 \\
 \underline{-12} \\
 26 \leftarrow 1400 - (400 \times 3) = 200 \\
 \underline{-24} \\
 27 \leftarrow 260 - (80 \times 3) = 20 \\
 \underline{-27} \\
 \leftarrow 27 - (9 \times 3) = 0
 \end{array}$$

$$\begin{array}{r}
 2489 \\
 3 \overline{) 7467} \\
 \textcircled{1} \textcircled{2} \textcircled{2}
 \end{array}$$

Name the quotient and remainder.

1. $8 \overline{) 9728}$

3. $3 \overline{) 8655}$

5. $6 \overline{) 7392}$

7. $4 \overline{) 6384}$

2. $6 \overline{) 4933}$

4. $7 \overline{) 9328}$

6. $5 \overline{) 6372}$

8. $7 \overline{) 8942}$

Try This!

9. $6 \overline{) 7000 + 1400 + 230 + 54}$

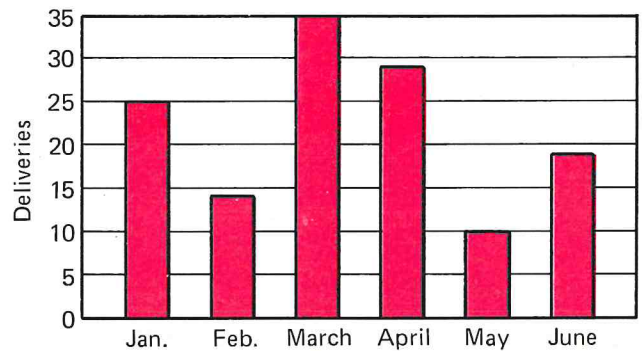
$$\begin{array}{r}
 7000 + 1400 + 230 + 54 \\
 \underline{-6000} \quad \underline{-1200} \quad \underline{-180} \quad \underline{-54} \\
 \textcircled{1000} \quad \textcircled{200} \quad \textcircled{50}
 \end{array}$$

10. $4 \overline{) 9000 + 400 + 60 + 8}$

Data

Study the bar graph, and answer the questions.

The graph shows the number of grocery deliveries Tom made during the first 6 months of the year.



- What was the greatest number of deliveries he made?
- The least?
- What was the average number of deliveries he made during the 6 months?

The scores on a mathematics test were 100, 100, 100, 100, 95, 81, 78, 78, 78, 78, 78, 66, 52, and 50. Use these data to answer the questions.

- What is the average?
- What is the mode?
- What is the median?

Highest and Lowest State Altitudes (in feet)

State	Highest point	Elevation	Lowest point	Elevation
Alaska	Mount McKinley	20,320	Pacific Ocean	0 (sea level)
Alabama	Cheaha Mountain	2407	Gulf of Mexico	0
Colorado	Mount Elbert	14,431	Arkansas River	3350
Illinois	Charles Mound	1241	Mississippi River	279
Ohio	Campbell Hill	1550	Ohio River	433
Vermont	Mount Mansfield	4393	Lake Champlain	95
West Virginia	Spruce Knob	4860	Potomac River	581

For the seven states listed above, complete the table.

	Average	Median	Mode
6-8. Highest elevation			
9-11. Lowest elevation			

Name _____

Estimating Quotients

To estimate the quotient, think:

$$23 \overline{)898}$$

Step 1: 23 is about 2 tens

Step 2: 898 is about 90 tens

Step 3: $90 \div 2$ is about 40

Estimate the quotient. The numerals underlined in red are to help you.

1. $43 \overline{)986}$

2. $21 \overline{)936}$

3. $32 \overline{)836}$

4. $21 \overline{)824}$

5. $42 \overline{)987}$

6. $23 \overline{)1034}$

7. $39 \overline{)1734}$

8. $62 \overline{)2494}$

9. $86 \overline{)4937}$

10. $73 \overline{)2938}$

Another way to estimate:

$$36 \overline{)2938}$$

Think: $2900 \div 3$ is about 900

$2900 \div 30$ is about 90

Estimate using the method above. The circles are to help you.

11. $(44) \overline{)2632}$

13. $(64) \overline{)3798}$

15. $(42) \overline{)3098}$

17. $(53) \overline{)4736}$

12. $(83) \overline{)2698}$

14. $(47) \overline{)3487}$

16. $(23) \overline{)1342}$

18. $(36) \overline{)2342}$

Name the quotient in Exercises 11–15 and compare it with your estimate.

19. _____ 20. _____ 21. _____ 22. _____ 23. _____

Division with 2-digit Divisors

Name the quotient and remainder.

$$\begin{array}{r} 27 \overline{)947} \\ \underline{810} \\ 137 \\ \underline{135} \\ 2 \end{array}$$

$$\begin{array}{r} 92 \overline{)9875} \\ \\ \\ \end{array}$$

$$\begin{array}{r} 36 \overline{)7351} \\ \\ \\ \end{array}$$

$$\begin{array}{r} 28 \overline{)8673} \\ \\ \\ \end{array}$$

Name the quotient and remainder.

$$5. 36 \overline{)293}$$

$$7. 43 \overline{)4672}$$

$$9. 56 \overline{)3742}$$

$$11. 97 \overline{)5372}$$

$$6. 72 \overline{)307}$$

$$8. 28 \overline{)7384}$$

$$10. 43 \overline{)1063}$$

$$12. 81 \overline{)3705}$$

Name the quotients.

$$13. \$46.92 \div 51 = \text{-----}$$

$$15. \$24.91 \div 47 = \text{-----}$$

$$14. \$92.61 \div 27 = \text{-----}$$

$$16. \$98.07 \div 467 = \text{-----}$$

$$17. 91 \overline{)798489}$$

$$18. 68 \overline{)943792}$$

$$19. 35 \overline{)967489}$$

Name _____

Square Root

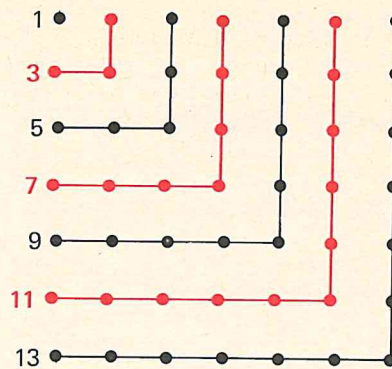
Study the pattern. Complete the equations.

$$1^2 = 1 = 1$$

$$2^2 = 4 = 1 + 3$$

$$3^2 = 9 = 1 + 3 + 5$$

$$4^2 = 16 = 1 + 3 + 5 + 7$$



1. $5^2 = 25 = 1 + 3 + \text{-----} + \text{-----} + \text{-----}$

2. $6^2 = \text{-----} = \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----}$

3. $7^2 = \text{-----} = \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----}$

4. Can you make a rule to tell how *odd* numbers can be used to find the square of a number? Hint: How many odd numbers are added to square

2? 3? 5? -----

Use the averaging method to name the square root.

See page 88 in your text if you have forgotten.

5. $\sqrt{289}$ ----- 6. $\sqrt{324}$ ----- 7. $\sqrt{841}$ ----- 8. $\sqrt{169}$ -----

Try This!

To find the square root of 25:

$$\begin{array}{r} 25 - 1 = 24 \\ 24 - 3 = 21 \\ 21 - 5 = 16 \\ 16 - 7 = 9 \\ 9 - 9 = 0 \end{array}$$

9. How many successive odd numbers were subtracted? -----
10. What is the $\sqrt{25}$? -----
11. Find the $\sqrt{16}$ using this method.
12. Why do you think this method would be difficult if you were finding $\sqrt{2025}$?

chapter 4

geometry

Geometry Review

Name the figure.



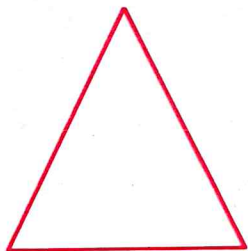
1. _____



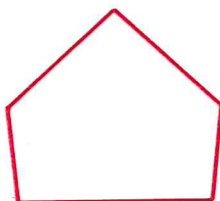
4. _____



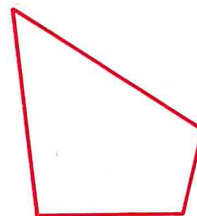
7. _____



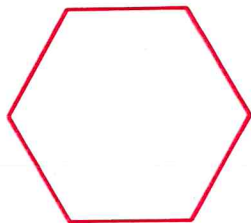
2. _____



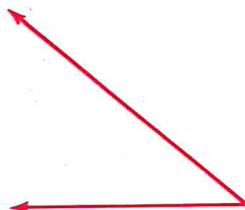
5. _____



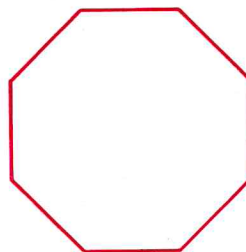
8. _____



3. _____



6. _____



9. _____

Name the unit of measure you would use to measure

10. a pencil.

11. weight of a person.

12. distance between two cities.

13. material for a dress.

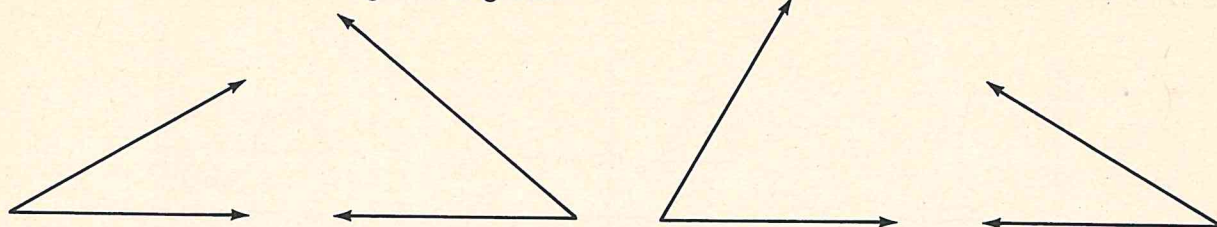
United States system _____

Metric system _____

Name _____

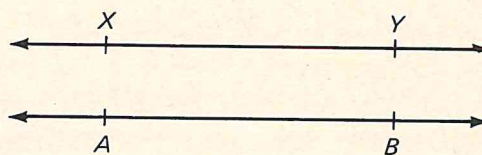
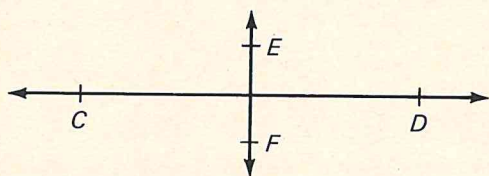
Angles — Parallelograms

Name the measure of the angle in degrees.



1. _____ 2. _____ 3. _____ 4. _____

5. Which pair of angles are congruent? _____



6. Name two perpendicular lines. _____ and _____

7. Name two parallel lines. _____ and _____

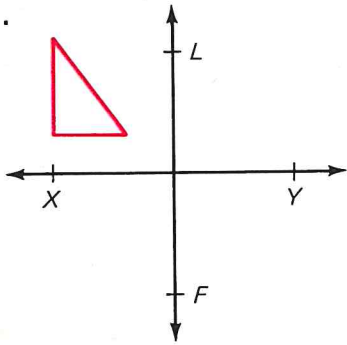
Name the polygon.

8. Any polygon formed with 2 pairs of parallel lines _____
9. A polygon with two pairs of parallel lines all the same length _____
10. A polygon with two pairs of parallel lines, four 90° angles, and
opposite sides the same length _____
11. A three-sided polygon with a right angle _____
12. A three-sided polygon with 3 congruent sides _____
- *13. In Exercise 12, if all sides are congruent the angles must be _____

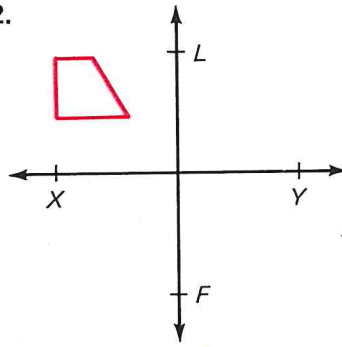
Slides and Flips

Draw the shape as it will look if you *slide* it in the direction of \vec{XY} .

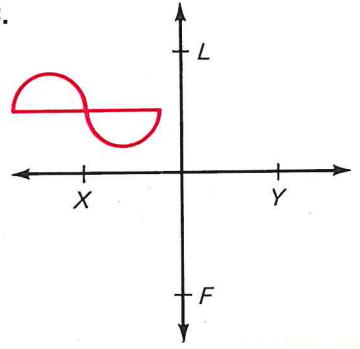
1.



2.

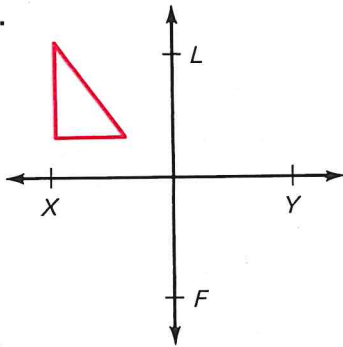


3.

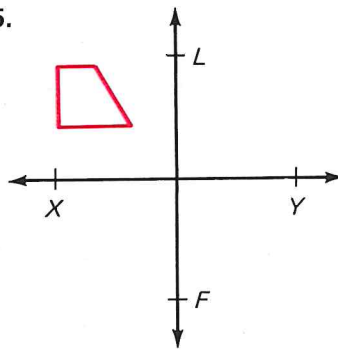


Draw the shape as it will look if you *flip* it over \vec{LF} .

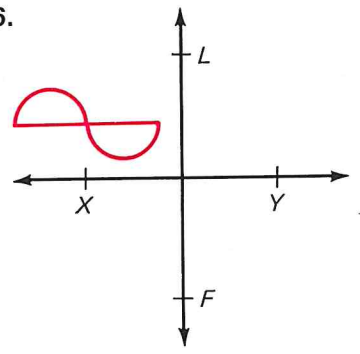
4.



5.

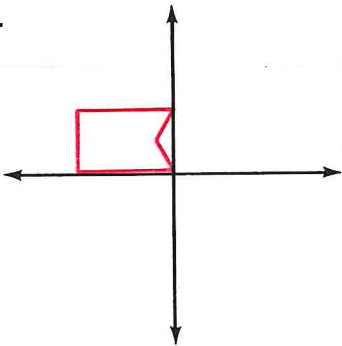


6.

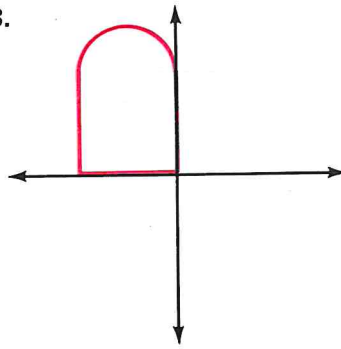


Draw the shape as it will look if you *turn* it 90° ↻.

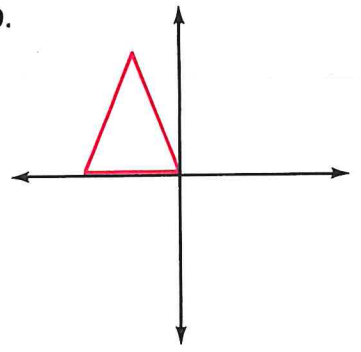
7.



8.

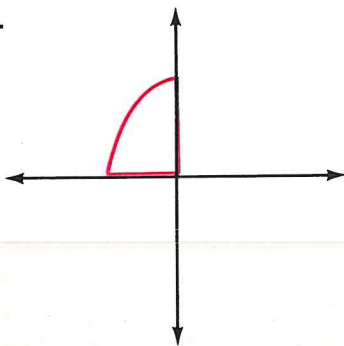


9.

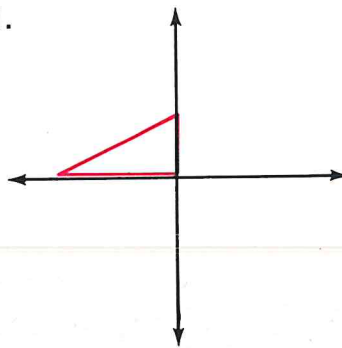


Draw the shape as it will look if you *turn* it 180° ↻.

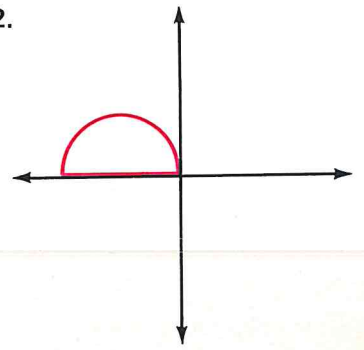
10.



11.



12.



Name _____

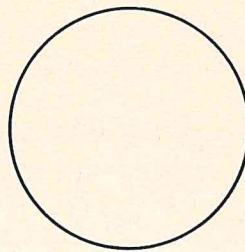
Circles — Congruence

1. Draw a line segment to separate the circle into two semicircles.

2. Label the points where the line segment intersects the *circumference* C and D .

3. \overline{CD} is a _____.

4. Draw a line segment that is *perpendicular* to \overline{CD} and intersects \overline{CD} at the center of the circle. Label the points where the segment intersects the circumference X and Y .



*5. A semicircle looks like a familiar measuring instrument. Can you name it? _____

*6. How many degrees in a semicircle? _____

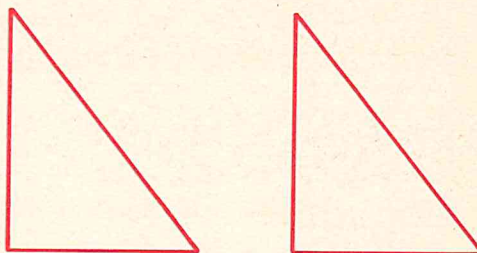
7. Draw two line segments that are congruent.

8. Do they have the same length? _____

9. Are the two triangles congruent? _____

10. Are the matching sides the same length? _____

11. Are the matching angles the same size? _____



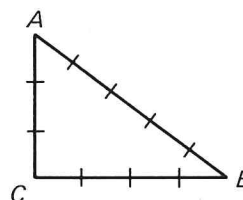
12. Can two polygons be congruent if the matching angles are different sizes? _____

13. Can two polygons be congruent if the matching sides are different sizes? _____

Area — Pythagorean Theorem

Follow the directions below.

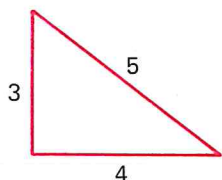
1. With \overline{AB} as a side construct a square. Mark the square in square units.
2. With \overline{AC} as a side construct a square and mark it in square units.
3. With \overline{CB} as a side construct a square and mark it in square units.



Name the square units in the square regions

4. with \overline{CB} as a side.
5. with \overline{AC} as a side.
6. with \overline{AB} as a side.

Complete the following.



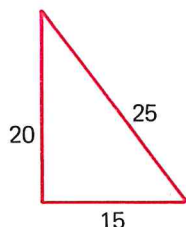
7. $4^2 = \dots\dots\dots$

10. $4^2 + 3^2 = 5^2$

8. $3^2 = \dots\dots\dots$

$\dots\dots\dots + \dots\dots\dots = \dots\dots\dots$

9. $5^2 = \dots\dots\dots$



11. $20^2 = \dots\dots\dots$

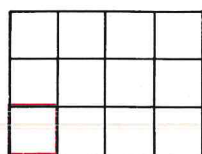
14. $20^2 + 15^2 = 25^2$

12. $15^2 = \dots\dots\dots$

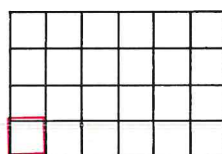
$\dots\dots\dots + \dots\dots\dots = \dots\dots\dots$

13. $25^2 = \dots\dots\dots$

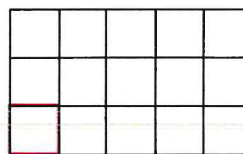
Name the area of each figure.



15. sq. units



16. sq. units



17. sq. units



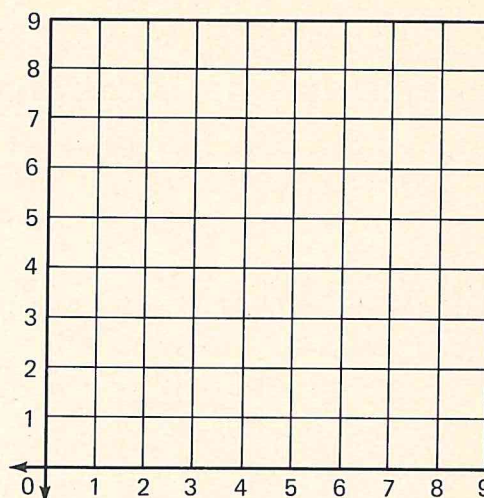
18. sq. units

Name _____

Number Planes Number Pairs

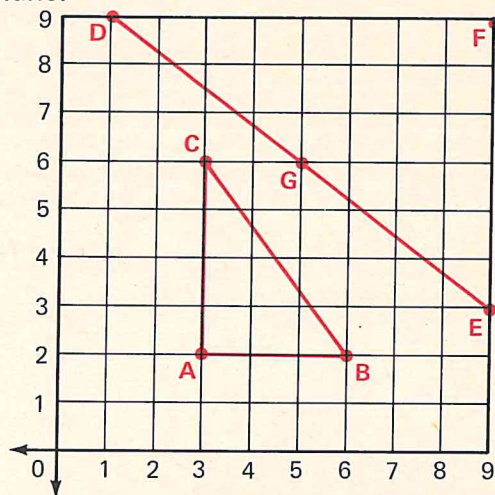
On the number plane at the right, label

1. $A(2, 2)$
2. $B(8, 2)$
3. $C(5, 6)$
4. $D(5, 2)$
5. Join points A and B , points B and C , points C and A , and points C and D .
6. The figure ABC is an _____ triangle.
7. The figure ACD is a _____ triangle.
8. To find the length of \overline{AC} , use the Pythagorean equation $a^2 + b^2 = c^2$. _____



Write the number pairs for the points on the number plane.

9. A _____
10. B _____
11. C _____
12. D _____
13. E _____
14. F _____



Use the equation $a^2 + b^2 = c^2$ to find the number of units of length in the line segment.

15. \overline{BC} = _____
16. \overline{DE} = _____
17. \overline{DG} = _____
18. \overline{GE} = _____

19. A boat travels 9 miles east then 12 miles north. How far is it from the starting point? _____

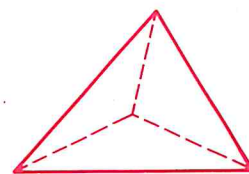
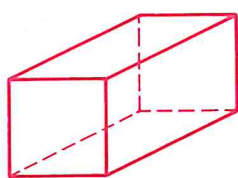


Planes — Closed Surfaces

Name the number of line segments needed to form the closed curve.

- | | | | | | |
|--------------|-------|------------------|-------|-------------|-------|
| 1. rectangle | ----- | 3. quadrilateral | ----- | 5. pentagon | ----- |
| 2. hexagon | ----- | 4. octagon | ----- | 6. triangle | ----- |

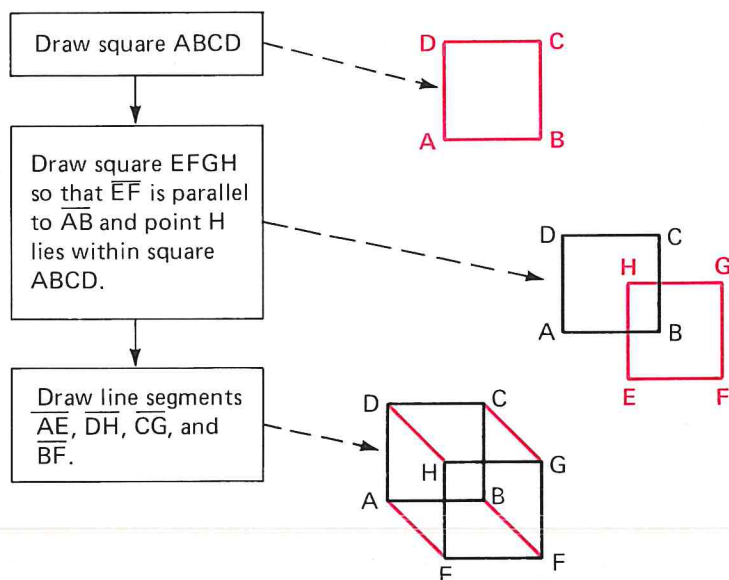
Write the name, number of edges, and number of faces for each figure.



- | | | | |
|------------------------|----------|-----------|-----------|
| Name | 7. ----- | 10. ----- | 13. ----- |
| Number of edges | 8. ----- | 11. ----- | 14. ----- |
| Number of faces | 9. ----- | 12. ----- | 15. ----- |

Study the flow chart, then draw a cube.

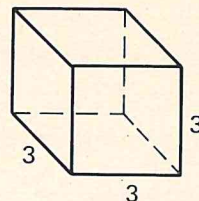
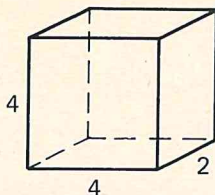
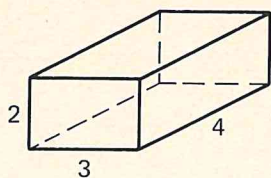
16.



Name _____

Area — Volume

Name the surface area and volume of each shape.



Surface area 1. _____

3. _____

5. _____

Volume 2. _____

4. _____

6. _____

Use the formula $l \times w \times h = V$ to name the volume in each rectangular prism.

	<i>l</i>	<i>w</i>	<i>h</i>	<i>V</i>
7.	3	4	8	
8.	6	9	4	
9.	20	10	30	
10.	20	20	5	

Name a possible *l*, *w*, and *h* for a rectangular prism that has the given volume.

	<i>l</i>	<i>w</i>	<i>h</i>	<i>V</i>
11.				16
12.				24
13.				18
14.				120

Just for Fun.

$$1^3 = 1 \times 1 \times 1 = 1$$

$$2^3 = 2 \times 2 \times 2 = 3 + 5 = \text{-----}$$

These are called cube numbers. Do you see the pattern?

$$15. 3^3 = 3 \times 3 \times 3 = 7 + \text{-----} + \text{-----} = \text{-----}$$

$$16. 4^3 = 4 \times 4 \times 4 = 13 + \text{-----} + \text{-----} + \text{-----} = \text{-----}$$

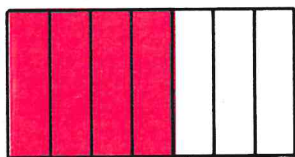
$$17. 5^3 = 5 \times 5 \times 5 = \text{-----} + \text{-----} + \text{-----} + \text{-----} + \text{-----} = \text{-----}$$

chapter 5

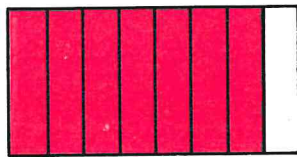
fractional numbers

Meaning of Fractions

Name the fraction for the shaded part.



1.

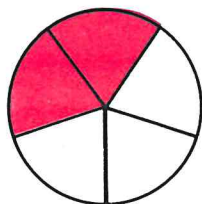


2.

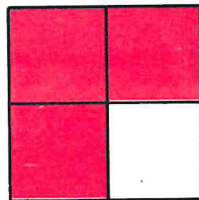


3.

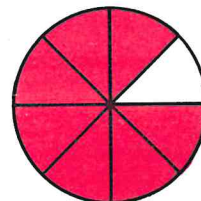
Complete the equation.



4. $2 \times \frac{1}{\square} = \dots\dots\dots$



5. $3 \times \frac{1}{\square} = \dots\dots\dots$



6. $7 \times \frac{1}{\square} = \dots\dots\dots$

Write a fraction for each word phrase and then circle the numerator.

7. three of the four boys

9. six of the nine girls

8. nine out of ten times

10. a forty percent chance

Complete the equations.

11. $4 \times \frac{1}{7} = \dots\dots\dots$

15. $6 \times \frac{1}{11} = \dots\dots\dots$

19. $5 \times \frac{1}{8} = \dots\dots\dots$

12. $7 \times \frac{1}{9} = \dots\dots\dots$

16. $6 \times \frac{1}{7} = \dots\dots\dots$

20. $3 \times \frac{1}{4} = \dots\dots\dots$

13. $\frac{4}{11} = \dots\dots\dots \times \frac{1}{11}$

17. $\frac{3}{4} = \dots\dots\dots \times \frac{1}{4}$

21. $\frac{7}{8} = \dots\dots\dots \times \frac{1}{8}$

14. $\frac{2}{3} = \dots\dots\dots \times \frac{1}{3}$

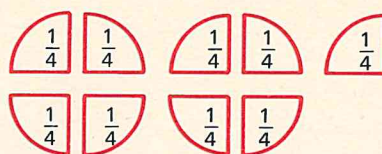
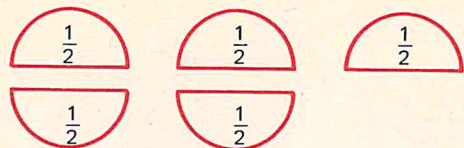
18. $\frac{4}{7} = \dots\dots\dots \times \frac{1}{7}$

22. $\frac{7}{12} = \dots\dots\dots \times \frac{1}{12}$

Name _____

Mixed Numerals

Fill in the blank.



1. How many halves?

4. How many fourths?

2. $\frac{5}{2}$ is wholes and $\frac{\square}{2}$.

5. $\frac{9}{4}$ is wholes and $\frac{\square}{4}$.

3. $\frac{5}{2} = \square\frac{1}{2}$

6. $\frac{9}{4} = \square\frac{1}{4}$

Complete the equation.

7. $\frac{14}{5} = \frac{5}{5} + \frac{5}{5} + \frac{\square}{5} = 2\frac{4}{5}$

8. $\frac{12}{7} = \frac{\square}{7} + \frac{5}{7} = \dots\dots\dots$

9. $\frac{8}{3} = \frac{3}{3} + \frac{\square}{3} + \frac{\square}{3} = \dots\dots\dots$

10. $\frac{7}{2} = \frac{\square}{2} + \frac{\square}{2} + \frac{\square}{2} + \frac{\square}{2} = \dots\dots\dots$

Name as a mixed numeral.

11. $\frac{7}{3} = \dots\dots\dots$

13. $\frac{5}{4} = \dots\dots\dots$

15. $\frac{7}{2} = \dots\dots\dots$

17. $\frac{9}{5} = \dots\dots\dots$

12. $\frac{9}{4} = \dots\dots\dots$

14. $\frac{15}{4} = \dots\dots\dots$

16. $\frac{13}{5} = \dots\dots\dots$

18. $\frac{11}{3} = \dots\dots\dots$

Name as fractions.

19. $2\frac{3}{4} = \dots\dots\dots$

21. $5\frac{1}{3} = \dots\dots\dots$

23. $6\frac{1}{7} = \dots\dots\dots$

25. $2\frac{3}{5} = \dots\dots\dots$

20. $4\frac{2}{7} = \dots\dots\dots$

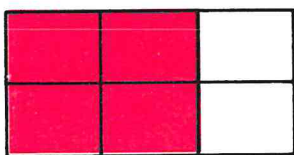
22. $6\frac{1}{5} = \dots\dots\dots$

24. $9\frac{2}{6} = \dots\dots\dots$

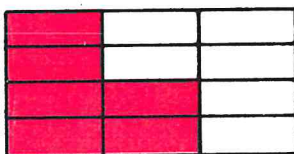
26. $3\frac{3}{8} = \dots\dots\dots$

Equivalent Fractions — Multiplication Division Relationship

Name the fraction for the shaded part in 2 ways.



1. $\frac{2}{3} = \dots\dots\dots$

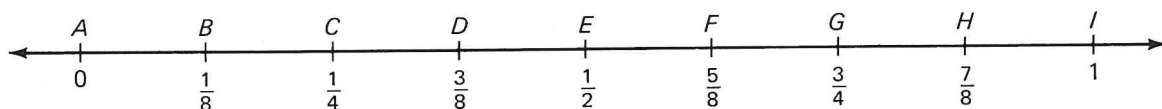


2. $\dots\dots\dots = \dots\dots\dots$



3. $\dots\dots\dots = \dots\dots\dots$

Name the points on the number line in two other ways.



4. A $\dots\dots\dots$

7. D $\dots\dots\dots$

10. G $\dots\dots\dots$

5. B $\dots\dots\dots$

8. E $\dots\dots\dots$

11. H $\dots\dots\dots$

6. C $\dots\dots\dots$

9. F $\dots\dots\dots$

12. I $\dots\dots\dots$

Write each multiplication as a division.

13. $\frac{1}{3} \times 12 =$

15. $\frac{1}{7} \times 14 =$

17. $\frac{1}{8} \times 24 =$

19. $\frac{1}{9} \times 18 =$

$\square \div 3$

14. $\frac{1}{4} \times 8 =$

16. $\frac{1}{5} \times 15 =$

18. $\frac{1}{7} \times 21 =$

20. $\frac{1}{8} \times 16 =$

Complete the equation.

21. $\frac{4}{12} \times 12 = \dots\dots\dots$

23. $\frac{5}{6} \times 6 = \dots\dots\dots$

25. $\frac{7}{8} \times 8 = \dots\dots\dots$

22. $\frac{5}{12} \times 12 = \dots\dots\dots$

24. $\frac{4}{7} \times 7 = \dots\dots\dots$

26. $\frac{3}{5} \times 5 = \dots\dots\dots$

Name _____

Using Renaming to Multiply Fractions

Use renaming to complete the equation.

1. $\frac{1}{4} \times \frac{4}{5} =$

$(\frac{1}{4} \times 4) \times \frac{1}{5} =$

_____ $\times \frac{1}{5} =$ _____

2. $\frac{1}{8} \times \frac{8}{9} =$

$(\frac{1}{8} \times \text{-----}) \times \frac{1}{9} =$

_____ $\times \frac{1}{9} =$ _____

Here is another way to use renaming. Complete the equation.

3. $\frac{1}{5} \times \frac{1}{4} =$

$(\frac{1}{5} \times \text{-----}) \times \frac{1}{20} =$

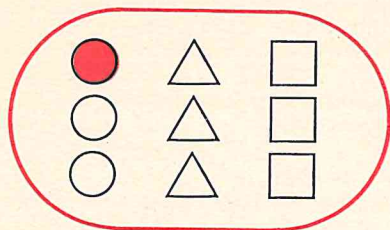
_____ $\times \frac{1}{20} =$ _____

4. $\frac{1}{3} \times \frac{1}{5} =$

$(\frac{1}{3} \times \text{-----}) \times \frac{1}{15} =$

_____ $\times \frac{1}{15} =$ _____

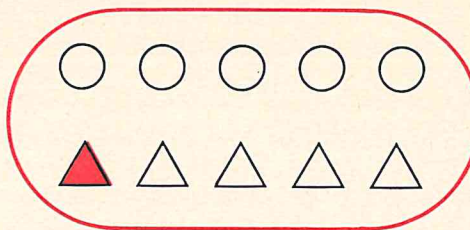
Name the products.



5. _____ of the set are circles.

6. _____ of the circles are red.

7. $\frac{1}{3} \times \frac{1}{3} =$ _____ of the total set is red.



8. _____ of the set are triangles.

9. _____ of the triangles are red.

10. $\frac{1}{2} \times \frac{1}{5}$ or _____ of the total set is red.

Name the product.

11. $\frac{1}{3} \times \frac{1}{5} =$ _____

13. $\frac{2}{3} \times \frac{1}{5} =$ _____

15. $\frac{2}{3} \times \frac{4}{5} =$ _____

12. $\frac{1}{2} \times \frac{1}{4} =$ _____

14. $\frac{3}{5} \times \frac{1}{2} =$ _____

16. $\frac{3}{5} \times \frac{7}{8} =$ _____

Using 1 to Rename Fractions

Write the name for 1 and rename the fraction.

$$1. \frac{2 \times \square}{3 \times \square} = \frac{\square}{6}$$

$$3. \frac{3 \times \square}{4 \times \square} = \frac{\square}{16}$$

$$5. \frac{4 \times \square}{5 \times \square} = \frac{\square}{20}$$

$$2. \frac{7 \times \square}{8 \times \square} = \frac{\square}{24}$$

$$4. \frac{3 \times \square}{7 \times \square} = \frac{\square}{21}$$

$$6. \frac{2 \times \square}{3 \times \square} = \frac{\square}{15}$$

Use the pattern to name the equivalent fractions.

$$7. \frac{1}{2} = \left\{ \frac{\boxed{2}}{4}, \frac{\boxed{3}}{6}, \frac{\square}{8}, \frac{\square}{10}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \dots \right\}$$

$$8. \frac{1}{3} = \left\{ \frac{\boxed{2}}{6}, \frac{\boxed{3}}{9}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \dots \right\}$$

$$9. \frac{2}{5} = \left\{ \frac{\boxed{4}}{10}, \frac{\boxed{6}}{15}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \dots \right\}$$

$$10. \frac{3}{4} = \left\{ \frac{\boxed{6}}{8}, \frac{\boxed{9}}{12}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \dots \right\}$$

Try This!

11. Multiplying by 1 can change the _____ but not the number.

12. The set of names for 1 is an _____ set.

13. All fractions that name the same number are called _____.

14. Can any whole number be named as a fraction? _____

Unscramble the letters.

15. L Q I A T E V E U N

16. U E T R M R N A O

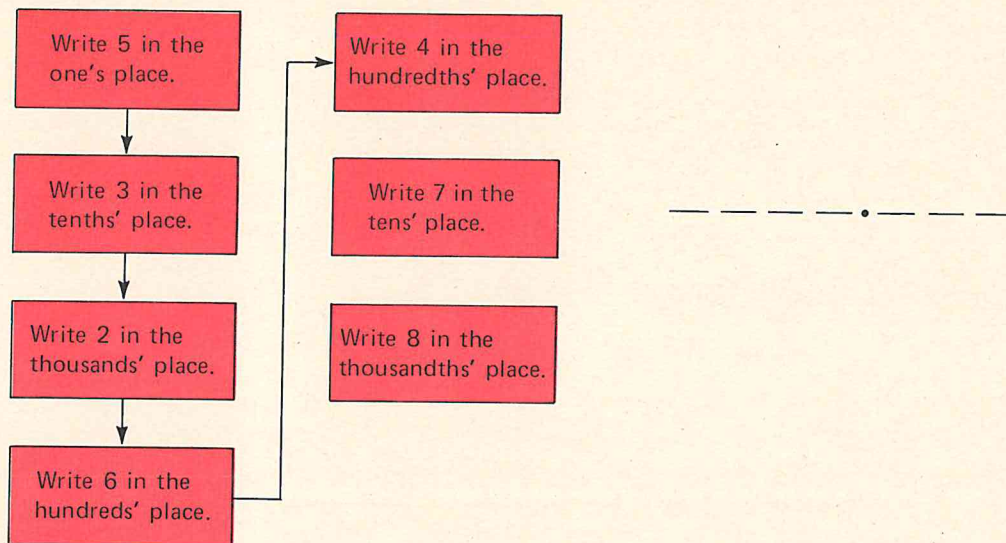
17. E N O A D M N I T O R

Name _____

Decimals — Tenths and Hundredths

Follow the directions.

1.



Draw a line under the numeral in the tenths' place.

2. 6.234

3. .543

4. 1.084

5. .34

6. 4.5

Draw a line under the numeral in the hundredths' place.

7. 2.934

8. 8.765

9. .7394

10. .426

11. 7.0342

In Examples 7–11 draw a ring around the numeral in the thousandths' place.

Place the decimal in the numeral to make sense.

12. He ran the mile in 401 minutes.

15. The pen cost 195 dollars.

13. His body temperature was 98643 degrees.

16. Gasoline cost 358 cents per gallon.

14. His car averaged 5963 miles per hour on the trip.

17. He averaged 1843 miles per gallon of gasoline.

Percent

Write each fraction or decimal as a percent.

1. $\frac{3}{10} =$ _____

3. $\frac{1}{4} =$ _____

5. $\frac{3}{4} =$ _____

7. $\frac{7}{10} =$ _____

2. $\frac{23}{100} =$ _____

4. $\frac{5}{10} =$ _____

6. $.06 =$ _____

8. $1.38 =$ _____

Write each percent as a decimal and as a fraction.

60%

50%

80%

35%

65%

9. _____

11. _____

13. _____

15. _____

17. _____

10. _____

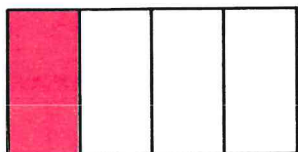
12. _____

14. _____

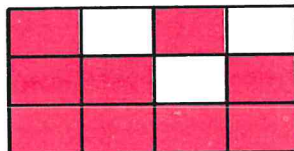
16. _____

18. _____

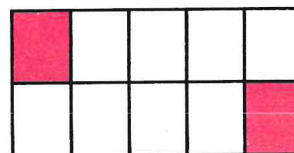
Name the percent that is shaded.



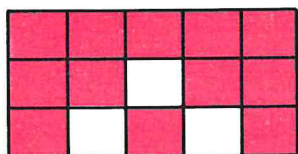
19. _____



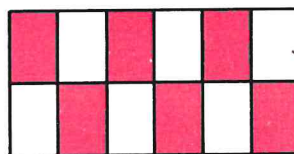
20. _____



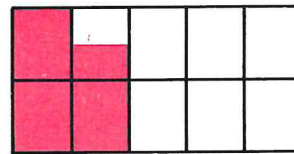
21. _____



22. _____



23. _____



24. _____

Try This!

25. What percent names 1? _____ 2? _____ 3? _____

26. What is 200% of 6? _____ 400% of 5? _____ 300% of 8? _____

27. Write 343% as a decimal _____; as a fraction. _____

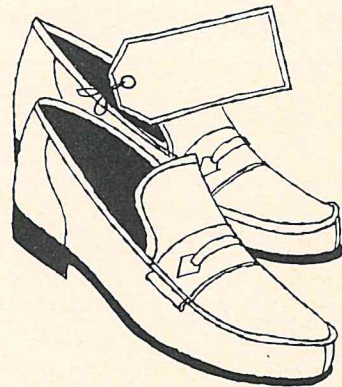
Name _____

Using Percents



Mark the sale price on the ticket if

1. \$12 shoes are reduced 20%.
2. \$4 blouses are reduced 20%.
3. \$15 sweaters sell for half price.
4. \$2 belts are reduced 50%.
5. \$3.90 shirts are reduced 10%.
6. \$8 skirts are reduced 25%.



Here are some percents that are used frequently.
Name the percent as a fraction.

- | | |
|-----------------------------|-----------------------------|
| 7. $12\frac{1}{2}\%$ _____ | 11. $37\frac{1}{2}\%$ _____ |
| 8. $62\frac{1}{2}\%$ _____ | 12. $16\frac{2}{3}\%$ _____ |
| 9. $33\frac{1}{3}\%$ _____ | 13. $66\frac{2}{3}\%$ _____ |
| 10. $87\frac{1}{2}\%$ _____ | 14. $83\frac{1}{3}\%$ _____ |

chapter 6

number theory

Naming Factors

Write equations to show the factors for the numbers. List the set of factors.

14

28

42

1. $14 \div 1 = \underline{\hspace{2cm}}$

4. $\underline{\hspace{2cm}}$

8. $\underline{\hspace{2cm}}$

2. $14 \div \underline{\hspace{1cm}} = 7$

5. $\underline{\hspace{2cm}}$

9. $\underline{\hspace{2cm}}$

3. $\{1, \underline{\hspace{1cm}}, 7, \underline{\hspace{1cm}}\}$

6. $\underline{\hspace{2cm}}$

10. $\underline{\hspace{2cm}}$

7. $\{\underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}\}$

11. $\underline{\hspace{2cm}}$

12. $\{\underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}\}$

List the factors of

13. 24 $\{\underline{\hspace{2cm}}\}$

16. 32 $\{\underline{\hspace{2cm}}\}$

14. 16 $\{\underline{\hspace{2cm}}\}$

17. 25 $\{\underline{\hspace{2cm}}\}$

15. 48 $\{\underline{\hspace{2cm}}\}$

18. 63 $\{\underline{\hspace{2cm}}\}$

Just for Fun

19. List the factors of 12.

$\{\underline{\hspace{2cm}}\}$

20. List the factors of 360.

$\{\underline{\hspace{2cm}}\}$

21. We frequently use 12 in our measurement system. 360 is the number of

degrees in a $\underline{\hspace{2cm}}$. Can you think of a reason why these numbers

might have been used? $\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

Name _____

Prime Numbers

Name the following sets of primes.

1. {primes which are less than 20} = {_____}

2. {primes which are even numbers} = {_____}

3. {primes which are between 20 and 40} = {_____}

4. {primes which have single digit numerals} = {_____}

To name a sum as two primes, follow these steps:

$36 = 2 + 34$ 34 is not a prime so we try the next prime, 3.

$36 = 3 + 33$ 33 is not a prime so we try the next prime, 5.

$36 = 5 + 31$ 31 and 5 are both prime numbers.

Name each sum as two primes.

5. $48 = \text{_____} + \text{_____}$

9. $28 = \text{_____} + \text{_____}$

13. $44 = \text{_____} + \text{_____}$

6. $69 = \text{_____} + \text{_____}$

10. $33 = \text{_____} + \text{_____}$

14. $88 = \text{_____} + \text{_____}$

7. $55 = \text{_____} + \text{_____}$

11. $38 = \text{_____} + \text{_____}$

15. $72 = \text{_____} + \text{_____}$

8. $19 = \text{_____} + \text{_____}$

12. $13 = \text{_____} + \text{_____}$

16. $96 = \text{_____} + \text{_____}$

17. Can 51 be named as the sum of two primes? _____

18. Can 29 be named as the sum of two primes? _____

19. Can all whole numbers be named as the sum of two primes? _____

20. Can all even numbers be named as the sum of two primes? _____

Prime Factorization

Name the prime factorization using exponents.

1. $28 =$ _____

4. $32 =$ _____

7. $42 =$ _____

2. $63 =$ _____

5. $81 =$ _____

8. $54 =$ _____

3. $64 =$ _____

6. $56 =$ _____

9. $72 =$ _____

Name the number for each prime factorization.

10. $7^2 \times 3^2 =$ _____

12. $4^2 \times 3^3 =$ _____

14. $7^2 \times 3^3 =$ _____

11. $2^3 \times 3^2 =$ _____

13. $5^2 \times 3^2 =$ _____

15. $2^4 \times 11^2 =$ _____

Complete the factor tree.

16.



18.



20.



17.



19.



21.



Just for Fun

Complete the factor tree.

22.



23.



24.



Name _____

Factors — Common Factors

List the set of factors for each number.

1. 88 {_____}

2. 96 {_____}

3. 66 {_____}

4. 60 {_____}

5. 100 {_____}

Name the factors for each pair of numbers. Then name the common factors and GCF for each pair of numbers.

	Factors	Common factors	GCF
6.	36 {_____}		
	42 {_____}	_____	_____
7.	28 {_____}		
	84 {_____}	_____	_____

Complete the table.

8.	Number	16	25	36	60	66	81	100
	Number of factors	5						

9. Which numbers have an odd number of factors? _____

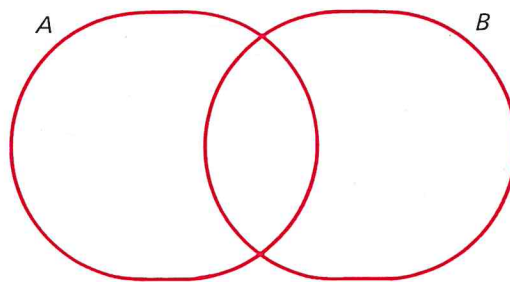
10. Can you see a pattern for numbers with an odd number of factors? What is it?

Common Multiples — Least Common Multiples

Write the multiples in the set diagram.

1. $A = \{\text{multiples of 3 less than 32}\}$

2. $B = \{\text{multiples of 5 less than 32}\}$



Complete the following.

3. $A \cap B = \{\text{-----}\}$

4. The LCM of 3 and 5 (other than 0) is -----.

5. $C = \{\text{multiples of 9 which are less than 60}\} = \{\text{-----}\}$

6. $D = \{\text{multiples of 6 which are less than 60}\} = \{\text{-----}\}$

7. $C \cap D = \{\text{-----}\}$

8. LCM of 6 and 9 is -----.

9. $E = \{\text{multiples of 7 which are less than 64}\} = \{\text{-----}\}$

10. $F = \{\text{multiples of 9 which are less than 64}\} = \{\text{-----}\}$

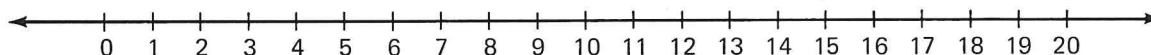
11. $E \cap F = \{\text{-----}\}$

12. LCM of 7 and 9 is -----.

13. The members in the intersection of each pair of sets above

are called -----.

Use the number line to complete these problems.



14. Put a ring around each multiple of 2, less than 20.

15. Put an X on each multiple of 3, less than 20.

16. List the set of common multiples of 2 and 3, less than 20.

$\{\text{-----}\}$

Name _____

Multiples of 2, 4, 5, 8, and 10

$A = \{69, 78, 85, 300, 255, 177, 228, 348, 568, 976, 1339, 4328, 4176, 7888, 70,000, 8945\}$

Write a subset of set A that names

1. multiples of 2: {_____}

2. multiples of 4: {_____}

Complete the sentence.

3. The multiples of 2 are all _____ numbers.

4. The multiples of 4 are also multiples of _____.

Describe the pattern for the multiples below.

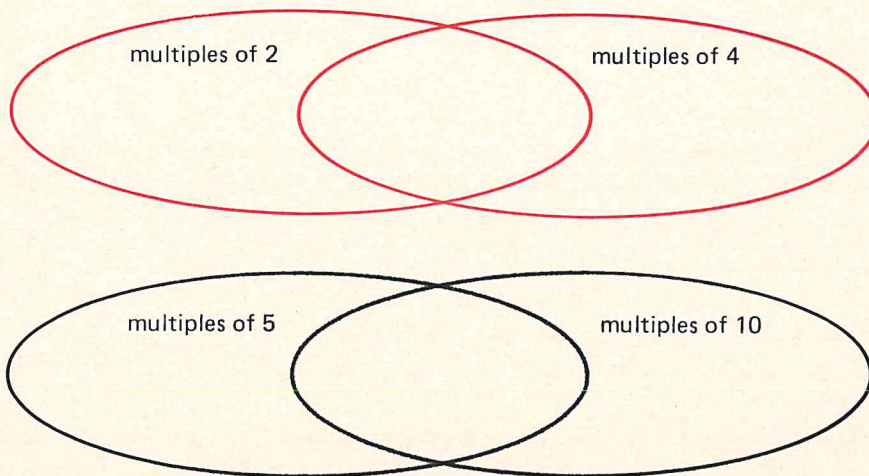
5. Multiples of 5: $\{5, 10, 15, 20, 25, 30, 35, 40, 45, \dots\}$

6. Multiples of 10: $\{10, 20, 30, 40, 50, 60, 70, 80, \dots\}$

Put the numerals into the set rings.

264, 384, 396, 465, 992, 738, 545, 2386, 6944, 7392, 8940

7.



Multiples of 3, 6, and 9

$$A = \{636, 495, 792, 864, 7329, 6939, 843\}$$

List the members in the subset of set A that are

1. multiples of 3: {_____}

2. multiples of 6: {_____}

3. multiples of 9: {_____}

4. If the number is a multiple of 9, draw a line under the numeral.

68,391

7254

698,751

436,293

73,429

64,386

7543

2654

Just for Fun

Complete the equations to discover the pattern.

$$(9 \times 9) + 7 = \underline{\hspace{2cm}}$$

$$(9 \times 98) + 6 = \underline{\hspace{2cm}}$$

$$(9 \times 987) + 5 = \underline{\hspace{2cm}}$$

$$(9 \times 9876) + 4 = \underline{\hspace{2cm}}$$

$$(9 \times 98,765) + 3 = \underline{\hspace{2cm}}$$

$$(9 \times 987,654) + 2 = \underline{\hspace{2cm}}$$

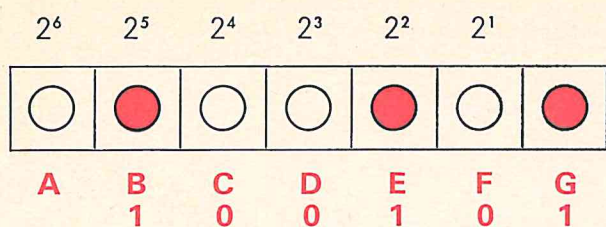
$$(9 \times 9,876,543) + 1 = \underline{\hspace{2cm}}$$

$$(9 \times 98,765,432) + 0 = \underline{\hspace{2cm}}$$

$$(9 \times 987,654,321) - 1 = \underline{\hspace{2cm}}$$

Name _____

Binary Numerals



When a bulb is red we have a set of that place value.

Light B shows 1 set of 32.

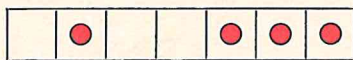
Light E shows 1 set of 4.

Light G shows 1 set of 1.

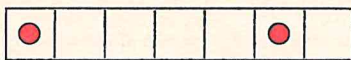
The base two numeral shown is written 100101_{two} .

Its value in base ten is 37.

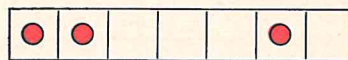
Write the binary numeral. Then give its value in base ten.



1. ______{two} = ______{ten}



3. ______{two} = ______{ten}



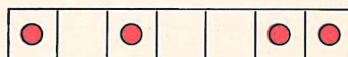
5. ______{two} = ______{ten}



2. ______{two} = ______{ten}



4. ______{two} = ______{ten}



6. ______{two} = ______{ten}

Name the sum or difference.

7.
$$\begin{array}{r} 110_{\text{two}} \\ + 100_{\text{two}} \\ \hline \end{array}$$

8.
$$\begin{array}{r} 111_{\text{two}} \\ - 101_{\text{two}} \\ \hline \end{array}$$

9.
$$\begin{array}{r} 1111_{\text{two}} \\ - 1111_{\text{two}} \\ \hline \end{array}$$

10.
$$\begin{array}{r} 1110_{\text{two}} \\ - 1011_{\text{two}} \\ \hline \end{array}$$

11.
$$\begin{array}{r} 1111_{\text{two}} \\ - 1010_{\text{two}} \\ \hline \end{array}$$

12. Karl had 10110_{two} cents. He spent 1010_{two} cents.

How much did he have left? _____

13. It takes 101101_{two} minutes to go downtown.

Is that longer or shorter than 1 hour? _____

7 and 12 Clocks

Ken thought about 12-clock arithmetic in the following way:

If I want to pack my doughnuts in packages of 12 and I have one tray of 8 doughnuts and one of 9, then I will have 5 doughnuts "left over." $8 + 9 \stackrel{12}{=} 5$

In each exercise below imagine you are packing doughnuts in packages of one dozen each. The clock equation tells you how many doughnuts are "left over." Complete the table.

	Tray	Tray	Equation
1.	8	5	$8 + 5 \stackrel{12}{=} \text{-----}$
2.	9	7	
3.		10	$\text{-----} + 10 \stackrel{12}{=} 9$
4.	10	10	
5.	6		$6 + \text{-----} \stackrel{12}{=} 2$

Complete the equations.

6. 4 boxes of 8 doughnuts. $4 \times 8 \stackrel{12}{=} \text{-----}$

7. $3 + 10 \stackrel{12}{=} \text{-----}$ 8. $5 \times 6 \stackrel{12}{=} \text{-----}$ 9. $7 \times 2 \stackrel{12}{=} \text{-----}$ 10. $4 + 9 \stackrel{12}{=} \text{-----}$

Complete the addition and multiplication tables for the 7-clock numbers.

11.

+	0	1	2	3	4	5	6
0							
1							
2							
3							
4							
5							
6							

12.

\times	0	1	2	3	4	5	6
0							
1							
2							
3							
4							
5							
6							

chapter 7

Name _____

addition, subtraction with fractional numbers

Renaming Fractions — Adding on the Number Line

Rename each fraction.

$$1. \frac{2 \times \square}{3 \times \square} = \frac{6}{9}$$

$$4. \frac{10 \div \square}{12 \div \square} = \frac{\square}{6}$$

$$7. \frac{7}{8} = \frac{\square}{16}$$

$$2. \frac{5 \times \square}{6 \times \square} = \frac{\square}{18}$$

$$5. \frac{18 \div \square}{24 \div \square} = \frac{\square}{4}$$

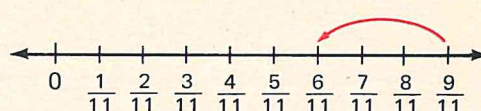
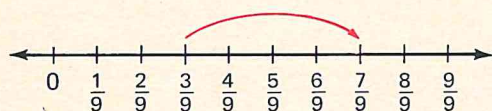
$$8. \frac{15}{25} = \frac{\square}{5}$$

$$3. \frac{9 \times \square}{10 \times \square} = \frac{\square}{30}$$

$$6. \frac{6 \times \square}{7 \times \square} = \frac{\square}{21}$$

$$9. \frac{24}{28} = \frac{\square}{7}$$

Complete the equation.



$$10. \frac{3}{9} + \frac{4}{9} = \text{-----}$$

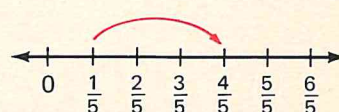
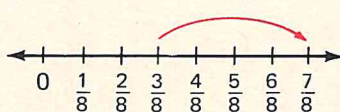
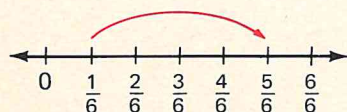
$$11. \frac{9}{11} - \frac{3}{11} = \text{-----}$$

$$12. \frac{7}{8} - \frac{3}{8} = \text{-----}$$

$$13. \frac{5}{9} - \frac{3}{9} = \text{-----}$$

$$14. \frac{6}{11} + \frac{3}{11} = \text{-----}$$

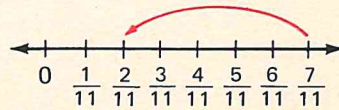
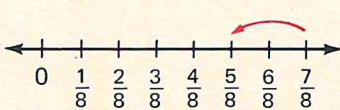
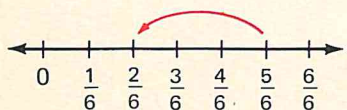
Write the equation shown on the number line.



$$15. \text{-----}$$

$$17. \text{-----}$$

$$19. \text{-----}$$



$$16. \text{-----}$$

$$18. \text{-----}$$

$$20. \text{-----}$$

Distributive Property

$$\frac{3}{8} + \frac{2}{8}$$

$$\left(3 \times \frac{1}{8}\right) + \left(2 \times \frac{1}{8}\right)$$

Step 1 Rename the fractions using multiplication.

$$(3 + 2) \times \frac{1}{8} = \frac{5}{8}$$

Step 2 Multiply the common factor by the **sum** of the other **2 factors**.

Complete the equations using the method above.

1. $\frac{2}{7} + \frac{3}{7}$

$$= (\text{---} \times \text{---}) + (\text{---} \times \text{---})$$

$$= (\text{---} + \text{---}) \times \text{---} = \text{---}$$

3. $\frac{5}{11} + \frac{3}{11}$

5. $\frac{4}{9} - \frac{3}{9}$

2. $\frac{4}{8} + \frac{3}{8}$

4. $\frac{9}{11} - \frac{4}{11}$

6. $\frac{11}{12} - \frac{6}{12}$

Short form $\frac{3}{11} + \frac{7}{11} = \frac{3+7}{11} = \frac{10}{11}$

Use the short form to name the sum or difference.

7. $\frac{3}{8} + \frac{4}{8} = \text{---}$

9. $\frac{4}{7} + \frac{2}{7} = \text{---}$

11. $\frac{5}{6} - \frac{4}{6} = \text{---}$

8. $\frac{5}{7} + \frac{1}{7} = \text{---}$

10. $\frac{7}{8} - \frac{3}{8} = \text{---}$

12. $\frac{9}{10} - \frac{6}{10} = \text{---}$

Name as a mixed numeral.

13. $\frac{5}{4} = \text{---}$

14. $\frac{9}{8} = \text{---}$

15. $\frac{11}{7} = \text{---}$

16. $\frac{13}{5} = \text{---}$

Name as a fraction.

17. $1\frac{1}{3} = \text{---}$

18. $1\frac{2}{7} = \text{---}$

19. $1\frac{3}{4} = \text{---}$

20. $1\frac{5}{8} = \text{---}$

Name _____

Adding and Subtracting Fractions Greater than 1

Rename the numbers.

1. $\frac{2}{3} = \frac{\square}{12}$

5. $1\frac{1}{3} = \frac{\square}{3}$

9. $3\frac{1}{2} = 2\frac{\square}{6}$

2. $\frac{5}{6} = \frac{\square}{18}$

6. $2\frac{1}{5} = 1\frac{\square}{5}$

10. $4\frac{1}{4} = 3\frac{\square}{12}$

3. $\frac{4}{5} = \frac{\square}{10}$

7. $3\frac{1}{4} = 2\frac{\square}{4}$

11. $7\frac{1}{3} = 6\frac{\square}{6}$

4. $\frac{5}{15} = \frac{\square}{3}$

8. $4\frac{1}{3} = 3\frac{\square}{3}$

12. $3\frac{1}{5} = 2\frac{\square}{10}$

Write and solve the equations.

13. Bill had $\frac{2}{3}$ of a pie. Tom had $\frac{4}{5}$ of a pie.

How much did they have together? _____

14. Mary had $1\frac{1}{4}$ cups of sugar. She used $\frac{2}{3}$ of

a cup. How much did she have left? _____

15. Mrs. Rose bought $1\frac{3}{4}$ pounds of cashews and $2\frac{2}{3}$ pounds of peanuts. How many pounds in all?

16. Sue had $1\frac{3}{4}$ quarts of red paint and $2\frac{1}{3}$ quarts

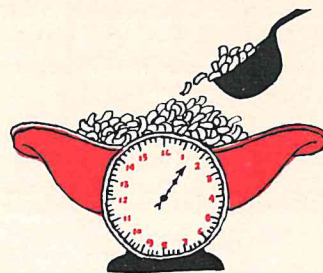
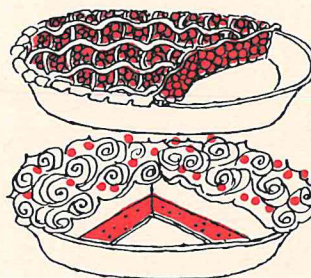
of white paint. How much paint in all? _____

17. Michelle made $4\frac{1}{3}$ quarts of punch for the party.

They used $2\frac{3}{4}$ quarts. How much was left? _____

18. There were 5 gallons of gas in the tank. $1\frac{7}{8}$

gallons were used. How much was left? _____



Multiplying a Fraction by a Whole Number

Name the product.

1. $\begin{array}{r} 3 \text{ fourths} \\ \times 2 \\ \hline \end{array}$

----- fourths

3. $\begin{array}{r} 5 \text{ sixths} \\ \times 3 \\ \hline \end{array}$

----- sixths

5. $\begin{array}{r} 4 \text{ sevenths} \\ \times 5 \\ \hline \end{array}$

----- sevenths

7. $\begin{array}{r} 3 \text{ eighths} \\ \times 4 \\ \hline \end{array}$

----- eighths

2. $\frac{3}{4} \times 2 = \text{-----}$ 4. $\frac{5}{6} \times 3 = \text{-----}$ 6. $\frac{4}{7} \times 5 = \text{-----}$ 8. $\frac{3}{8} \times 4 = \text{-----}$

Name the product.

9. $2\frac{3}{4} \times 3$

2		$\frac{3}{4}$
$\times 3$		$\times 3$

= -----

10. $4\frac{2}{3} \times 5$

4		$\frac{2}{3}$
$\times 5$		$\times 5$

= -----

11. $5\frac{2}{7} \times 4$

5		$\frac{2}{7}$
$\times 4$		$\times 4$

= -----

12. $3\frac{4}{5} \times 2$

3		$\frac{4}{5}$
$\times 2$		$\times 2$

= -----

13. $\begin{array}{r} 3\frac{1}{4} \\ \times 5 \\ \hline \end{array}$

15. $\begin{array}{r} 4\frac{1}{5} \\ \times 8 \\ \hline \end{array}$

17. $\begin{array}{r} 2\frac{1}{6} \\ \times 7 \\ \hline \end{array}$

19. $\begin{array}{r} 3\frac{1}{8} \\ \times 9 \\ \hline \end{array}$

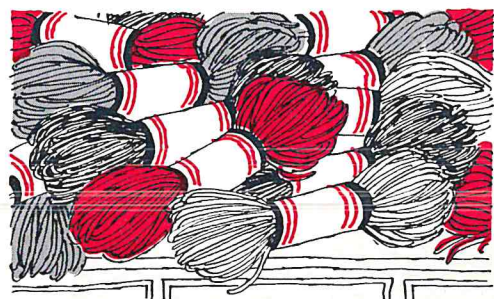
14. $\begin{array}{r} 6\frac{1}{3} \\ \times 7 \\ \hline \end{array}$

16. $\begin{array}{r} 7\frac{2}{5} \\ \times 9 \\ \hline \end{array}$

18. $\begin{array}{r} 9\frac{3}{4} \\ \times 4 \\ \hline \end{array}$

20. $\begin{array}{r} 7\frac{3}{7} \\ \times 8 \\ \hline \end{array}$

21. Ruth wants to knit 4 pair of socks.
If each pair takes $1\frac{3}{4}$ ounces of
yarn, how much yarn will she need? -----



Name _____

Subtracting Fractions

Name the difference.

$$\begin{array}{r} 1. \quad 4\frac{1}{8} \\ - 3\frac{4}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 9\frac{2}{8} \\ - 5\frac{3}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 5\frac{1}{3} \\ - 1\frac{5}{6} \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 7\frac{1}{3} \\ - 2\frac{5}{12} \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 3\frac{2}{3} \\ - \frac{7}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 3\frac{2}{5} \\ - 1\frac{4}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 7\frac{1}{4} \\ - 2\frac{3}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 4\frac{2}{5} \\ - 2\frac{7}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 4\frac{1}{3} \\ - 2\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 6\frac{1}{2} \\ - 3\frac{4}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 5\frac{3}{7} \\ - 2\frac{5}{7} \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 3\frac{1}{4} \\ - 1\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 6\frac{1}{4} \\ - 2\frac{3}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 6\frac{2}{5} \\ - 1\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 7\frac{3}{4} \\ - 2\frac{4}{5} \\ \hline \end{array}$$

Try This! (Do step 1 first.)

To subtract	$5\frac{4}{8}$	Step 2: add $\frac{1}{8}$	$5\frac{5}{8}$
	$- 2\frac{7}{8}$	Step 1: add $\frac{1}{8}$	$- 3$
			$\hline 2\frac{5}{8}$

	$8\frac{3}{7}$	Step 2: add $\frac{2}{7}$	$8\frac{5}{7}$
	$- 1\frac{5}{7}$	Step 1: add $\frac{2}{7}$	$- 2$
			$\hline 6\frac{5}{7}$

Use the method above to subtract.

$$\begin{array}{r} 16. \quad 6\frac{1}{3} \\ - 2\frac{2}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 6\frac{5}{9} \\ - 2\frac{6}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 7\frac{2}{5} \\ - 2\frac{3}{5} \\ \hline \end{array}$$

Try the method above on these exercises.

$$\begin{array}{r} 19. \quad 6 \\ - 2\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 8 \\ - 2\frac{4}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 9 \\ - 4\frac{3}{8} \\ \hline \end{array}$$

Adding and Subtracting Decimals

Name the sum.

1.
$$\begin{array}{r} 3 \text{ tenths} \\ + 8 \text{ tenths} \\ \hline \end{array}$$

----- tenths

3.
$$\begin{array}{r} 4 \text{ tenths} \\ + 9 \text{ tenths} \\ \hline \end{array}$$

----- tenths

5.
$$\begin{array}{r} 6 \text{ and } 4 \text{ tenths} \\ + 2 \text{ and } 7 \text{ tenths} \\ \hline \end{array}$$

----- and ----- tenths

7.
$$\begin{array}{r} 2 \text{ and } 38 \text{ hundredths} \\ + 3 \text{ and } 29 \text{ hundredths} \\ \hline \end{array}$$

----- and ----- hundredths

2.
$$\begin{array}{r} .3 \\ + .8 \\ \hline \end{array}$$

4.
$$\begin{array}{r} .4 \\ + .9 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 6.4 \\ + 2.7 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 2.38 \\ + 3.29 \\ \hline \end{array}$$

Name the sum or difference.

9.
$$\begin{array}{r} .7 \\ + .5 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 1.2 \\ - .8 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 3.4 \\ - .6 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 2.7 \\ + 1.8 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 9.3 \\ - 2.4 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 2.23 \\ + .84 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 7.29 \\ - .36 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 8.24 \\ - 3.29 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 6.25 \\ + 4.96 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 7.38 \\ + 2.95 \\ \hline \end{array}$$

Just for Fun

Decimus means tenth in Latin.

19. What month of the year is spelled similar to

decimal? -----

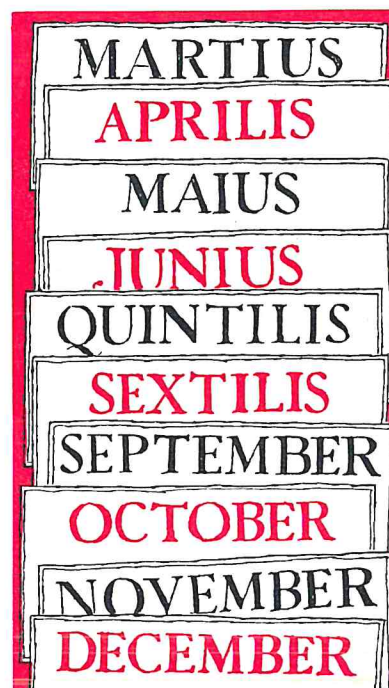
20. Is it the tenth month of the year? -----

21. Can you explain? Hint: Look up the topic of

Calendar in your encyclopedia. -----

22. What number would you think of when we see

October? ----- September? -----



Name _____

Multiplying Decimals

Name the product.

1. $\begin{array}{r} .3 \\ \times 8 \\ \hline \end{array}$

4. $\begin{array}{r} .4 \\ \times 8 \\ \hline \end{array}$

7. $\begin{array}{r} 4.9 \\ \times 9 \\ \hline \end{array}$

10. $\begin{array}{r} 7.2 \\ \times 7 \\ \hline \end{array}$

13. $\begin{array}{r} 7.53 \\ \times 3 \\ \hline \end{array}$

2. $\begin{array}{r} .8 \\ \times 6 \\ \hline \end{array}$

5. $\begin{array}{r} .5 \\ \times 5 \\ \hline \end{array}$

8. $\begin{array}{r} 6.5 \\ \times 8 \\ \hline \end{array}$

11. $\begin{array}{r} 6.34 \\ \times 6 \\ \hline \end{array}$

14. $\begin{array}{r} 9.65 \\ \times 7 \\ \hline \end{array}$

3. $\begin{array}{r} .9 \\ \times 3 \\ \hline \end{array}$

6. $\begin{array}{r} 3.8 \\ \times 6 \\ \hline \end{array}$

9. $\begin{array}{r} 8.3 \\ \times 4 \\ \hline \end{array}$

12. $\begin{array}{r} 4.28 \\ \times 4 \\ \hline \end{array}$

15. $\begin{array}{r} 7.24 \\ \times 8 \\ \hline \end{array}$

Try This!

16. $\begin{array}{r} \boxed{6} + \boxed{.3} + \boxed{.04} \\ \times 4 \\ \hline \boxed{24} + \boxed{1.2} + \boxed{.16} \end{array}$

17. $\begin{array}{r} \boxed{7} + \boxed{.4} + \boxed{.02} \\ \times 8 \\ \hline \boxed{} + \boxed{} + \boxed{} \end{array}$

18. $\begin{array}{r} \boxed{2} + \boxed{.9} + \boxed{.08} \\ \times 8 \\ \hline \boxed{} + \boxed{} + \boxed{} \end{array}$

Product _____

Product _____

Product _____

19. To get to school and back Linda walks 3.4 miles each day. If she makes the trip 5 days a week, how many miles

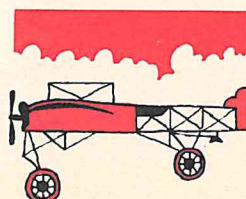
does she travel? _____

20. In 1929, a man ran from New York to Los Angeles (3610 miles) averaging 6.86 miles per hour. At that rate how

far did he run in 8 hours? _____

21. The world's air speed record in 1906 was 25.65 miles per hour. How far would that plane travel

in 8 hours? _____



Multiplying by a Power of 10

Name the product.

1. $\frac{2}{10} \times \frac{3}{10} =$ -----

3. $\frac{3}{10} \times \frac{2}{100} =$ -----

5. $\frac{4}{10} \times \frac{2}{10} =$ -----

2. $.2 \times .3 =$ -----

4. $.3 \times .02 =$ -----

6. $.4 \times .2 =$ -----

Study the pattern. Then complete the equation.

$.423 \times 10 = 4.23$

7. $.387 \times 10 =$ -----

10. $.983 \times 10 =$ -----

$.423 \times 100 = 42.3$

8. $.387 \times 100 =$ -----

11. $.983 \times 100 =$ -----

$.423 \times 1000 = 423.$

9. $.387 \times 1000 =$ -----

12. $.983 \times 1000 =$ -----

Complete the sentences.

13. To multiply by 10, move the decimal point -----

14. To multiply by 100, move the decimal point -----

15. To multiply by 1000, move the decimal point -----

Since division is the opposite of multiplication

*16. to divide by 10, move the decimal point -----

*17. to divide by 100, move the decimal point -----

*18. to divide by 1000, move the decimal point -----

Complete the equations.

19. $875 \div 10 =$ -----

22. $938 \div 10 =$ -----

25. $625 \div 10 =$ -----

20. $875 \div 100 =$ -----

23. $938 \div 100 =$ -----

26. $625 \div 100 =$ -----

21. $875 \div 1000 =$ -----

24. $938 \div 1000 =$ -----

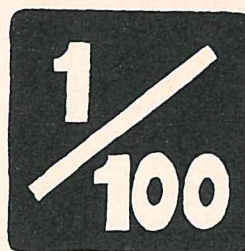
27. $625 \div 1000 =$ -----

Name _____

Percent — Probability

Complete the table.

	Fraction	Percent	Decimal	Multiplied by 10
1.	$\frac{3}{10}$.3	3
2.	$\frac{1}{2}$			
3.	$\frac{3}{4}$			
4.	$\frac{9}{10}$			
5.	$\frac{23}{100}$			
6.	$\frac{29}{100}$			
7.	$\frac{7}{10}$			



Name the product.

- | | | |
|-------------------------------|-------------------------------|--------------------------------|
| 8. $30\% \times 50 =$ _____ | 12. $25\% \times 40 =$ _____ | 16. $75\% \times 28 =$ _____ |
| 9. $50\% \times 184 =$ _____ | 13. $10\% \times 964 =$ _____ | 17. $12\% \times 200 =$ _____ |
| 10. $63\% \times 300 =$ _____ | 14. $45\% \times 400 =$ _____ | 18. $25\% \times 1000 =$ _____ |
| 11. $50\% \times 726 =$ _____ | 15. $34\% \times 50 =$ _____ | 19. $1\% \times 50 =$ _____ |

Name the probability as a fraction.

- | | |
|----------------------------------|------------------------------|
| 20. Eight out of ten times _____ | 23. 30% of the time _____ |
| 21. A fifty-fifty chance _____ | *24. three-to-one odds _____ |
| 22. 9 chances out of ten _____ | 25. 80% of the time _____ |

chapter 8

statements

Number Phrases and Sentences

Write a number phrase or sentence for each word phrase or sentence.

1. The quotient of 12 divided by 6 -----
2. The product of 67 and 96 -----
3. The difference between 16 and 50 -----
4. Six is less than 10 -----
5. Eight is greater than 5 -----
6. The product of 11 times 25 is 275 -----
7. The quotient of 63 divided by 7 is 9 -----
8. The product of 6 times 9 is less than 60 -----

Use the replacement set at the left to name the solution set.

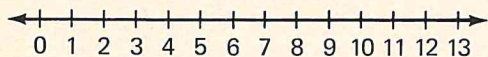
	Replacement set	Sentence	Solution set
9.	{odd numbers}	$n \times 7 = 63$	
10.	{even numbers}	$n \times 7 = 56$	
11.	{multiples of 3}	$n \times 4 = 12$	
12.	{multiples of 12}	$n < 75$	
13.	{factors of 32}	$n < 10$	
14.	{prime numbers}	$n \times 5 = 35$	
*15.	{prime numbers}	$n \div 6 = 3$	

Name _____

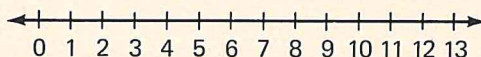
Graphing Solutions

On the number line graph the solution set for each sentence.
The replacement set is {whole numbers}.

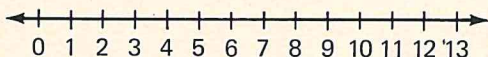
1. $n + 5 < 12$



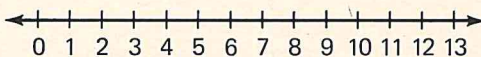
7. $1 < n < 9$



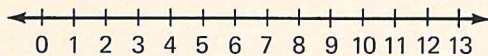
2. $n \times 3 < 15$



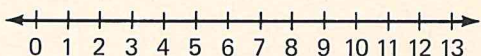
8. $3 < n < 11$



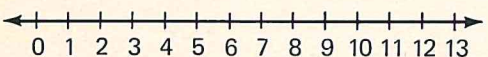
3. $n - 4 < 3$



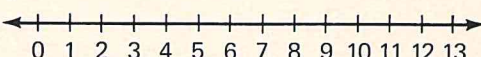
9. $4 < n < 9$



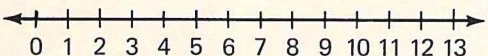
4. $n \times 4 < 16$



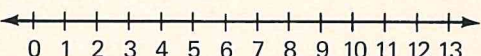
10. $5 < n < 10$



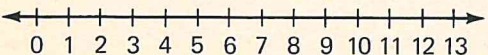
5. $n + 3 < 10$



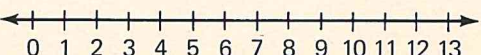
11. $5 < n < 12$



6. $n - 5 > 3$



12. $2 < n < 4$



Equivalent Equations

Write an equivalent sentence for each sentence on the left.

1. The number is a multiple of 2 and 3. _____
2. The number can not be divided by two without a remainder. _____
3. The number can be divided by nine without a remainder. _____
4. The number ends in zero or five. _____

Write 4 equivalent sentences using the set of factors and product.

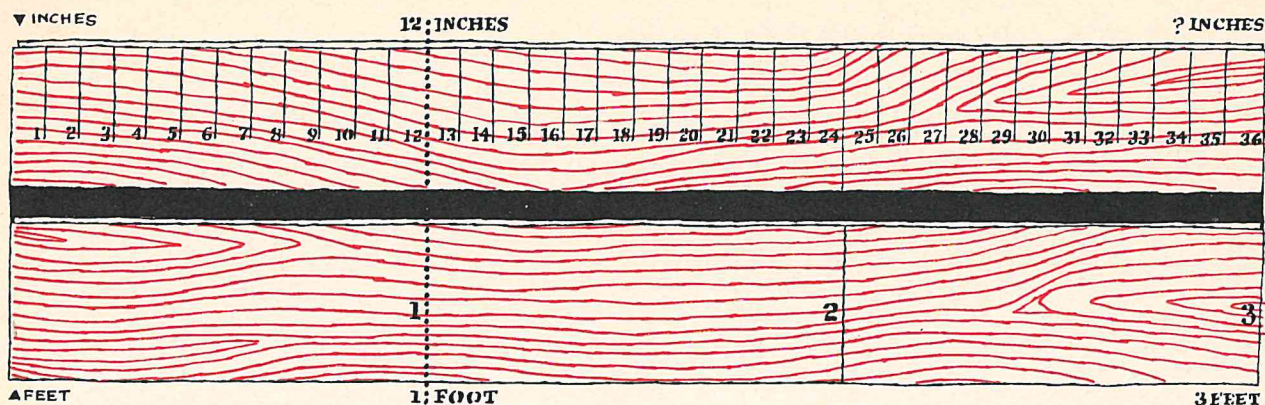
- | | | | |
|---------------------------------|------------|------------|------------|
| {3, 9, 27} | {6, 8, 48} | {7, 9, 63} | {35, 5, 7} |
| 5. $3 \times 9 = \square$ _____ | 9. _____ | 13. _____ | 17. _____ |
| 6. _____ | 10. _____ | 14. _____ | 18. _____ |
| 7. _____ | 11. _____ | 15. _____ | 19. _____ |
| 8. _____ | 12. _____ | 16. _____ | 20. _____ |

Write at least 2 equivalent equations to solve the problem.

21. Bill has 8 points. He needed 14. How many more does he need? _____
22. Mary had 38¢. She has 24¢ left. How much did she spend? _____
23. Fred has 63 marbles. How many sets of seven can he make? _____
24. Sue has 72¢ worth of stamps. How many 8¢ stamps is that? _____

Name _____

Functions and Sequences



Write the function rule, then name the quantities.

Rate	Rule	Quantities
1. 50¢ per hour	_____	_____ ¢ for 5 hours _____ ¢ for 7 hours
2. 12 inches per foot	_____	_____ inches in 3 feet _____ inches in 8 feet
3. 60 minutes per hour	_____	_____ minutes in 4 hours _____ minutes in 6 hours
4. 24 students per room	_____	_____ students in 2 rooms _____ students in 9 rooms
5. 16 ounces per pound	_____	_____ ounces in 24 pounds _____ ounces in 36 pounds

Continue the sequence for 5 more terms. Give the rule for naming the term.

6. {5, 10, 15, _____, _____, _____, _____}
7. {4, 9, 14, _____, _____, _____, _____}
8. {7, 12, 17, _____, _____, _____, _____}
9. {1, 4, 9, _____, _____, _____, _____}
10. {0, 3, 8, _____, _____, _____, _____}

Formulas

Match the number phrase with the thing it names.

1. _____ = $l \times w \times h$

a. A

5. _____ = $D \div t$

e. w

2. _____ = $r \times t$

b. V

6. _____ = $A \div l$

f. r

3. _____ = $l \times w$

c. P

7. _____ = $A \div w$

g. t

4. _____ = $2 \times (l + w)$

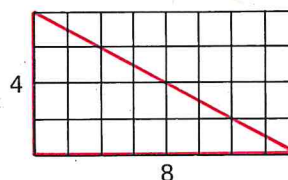
d. D

8. _____ = $D \div r$

h. l

To find the area of a triangle we multiply $\frac{1}{2} \times (\text{base} \times \text{height})$.

$$\begin{aligned} A &= \frac{1}{2} \times (b \times h) \\ &= \frac{1}{2} \times (8 \times 4) = 16 \end{aligned}$$



9. Can you explain why we multiply by $\frac{1}{2}$?

Write a formula for

10. finding the area of a square if each side is s . _____

11. finding the perimeter of a square if each side is s . _____

12. finding the volume of a cube if each side is s . _____

Name the volume, length, width, or height.

13. $l = 3$

14. $l = 3$

15. $l =$ _____

16. $l = 3$

$w = 8$

$w = 4$

$w = 4$

$w =$ _____

$h = 4$

$h =$ _____

$h = 9$

$h = 8$

$V =$ _____ cu. in.

$V = 72$ cu. in.

$V = 108$ cu. in.

$V = 240$ cu. in.

Name _____

Graphing Function Equations

Work on the number plane.

1. Locate and label the following points on the number plane. The function equation is $m - 2 = f(m)$

$A (3, 1)$ $B (4, 2)$ $C (5, 3)$
 $D (7, 5)$ $E (8, 6)$

Connect points A, B, C, D , and E .

Write two more ordered pairs for this

function rule. _____

2. Locate and label the following points.

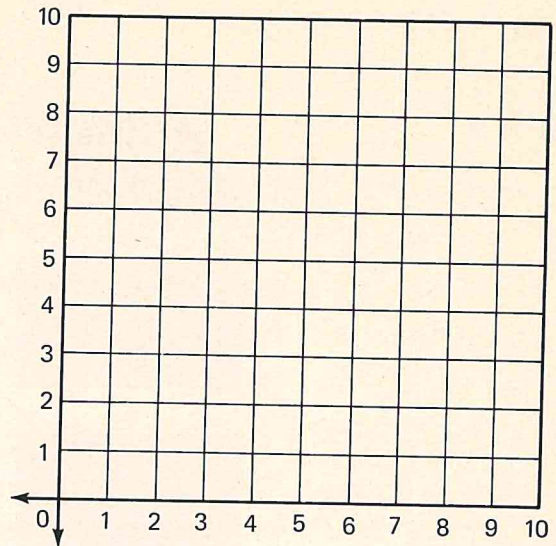
$A (3, 1)$ $F (6, 2)$ $X (9, 3)$

Connect points A, F , and X .

Write an equation for the function. _____

3. Are the graphs for the two equations parallel? _____

4. Name the point of intersection. _____



Use the number plane at the right.

5. Name the ordered pair for each point.

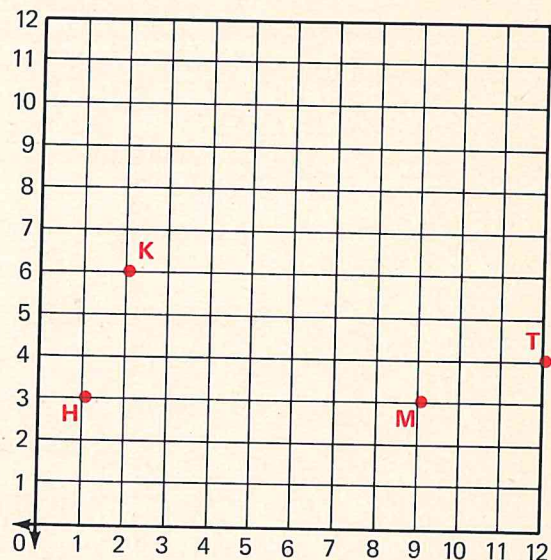
$H =$ _____ $M =$ _____

$K =$ _____ $T =$ _____

6. Connect points H and K . Write an equation for the set of ordered pairs on the line.

7. Connect points M and T . Write an equation for the set of ordered pairs on the line.

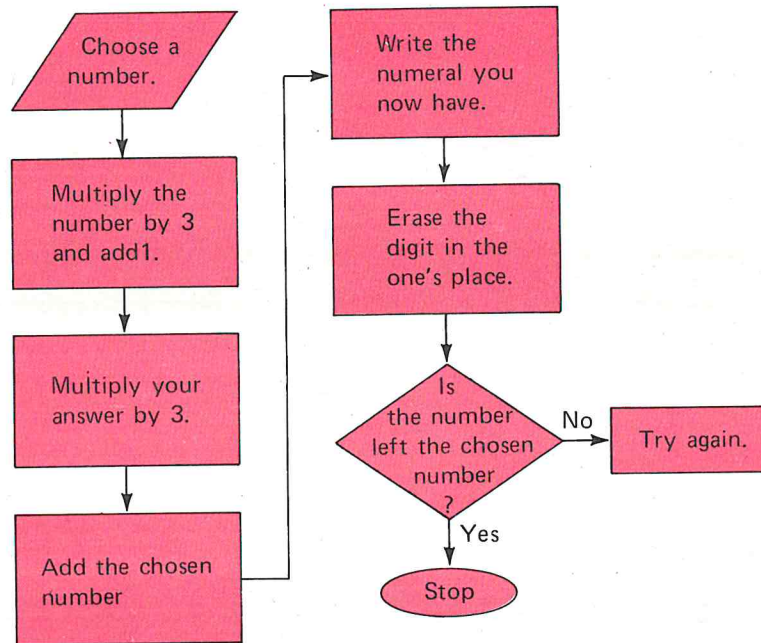
8. Connect points H, K , and M . What figure do you have?



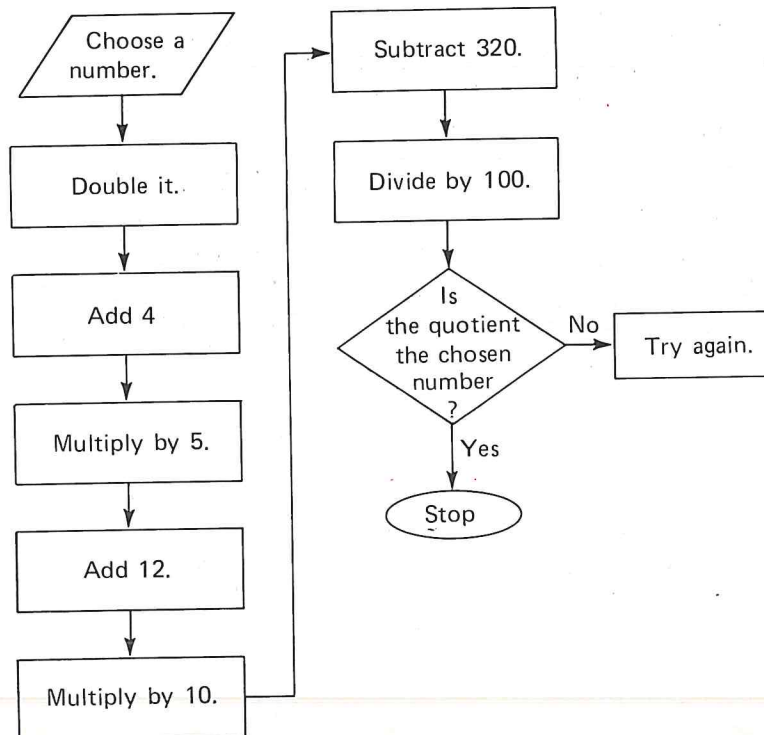
Following Directions

Just for Fun

1. Try this with a friend.



2. Here is another method.

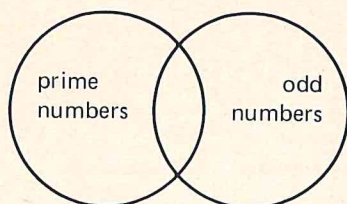


Do you know any "tricks" like this? Share them with your group.

Name _____

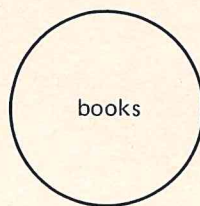
Some — No

Study the set diagrams. Write No or Some to complete the sentences.



1. _____ prime numbers are odd.

2. _____ odd numbers are primes.



3. _____ books are newspapers.

4. _____ newspapers are books.

Draw a diagram to show.

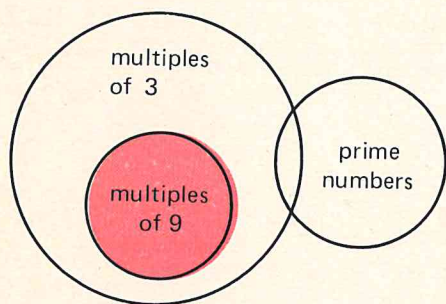
5. No multiples of even numbers are odd numbers.

7. Some multiples of 2 are multiples of 3.

6. Some cars have three wheels.

8. No airplanes fly under water.

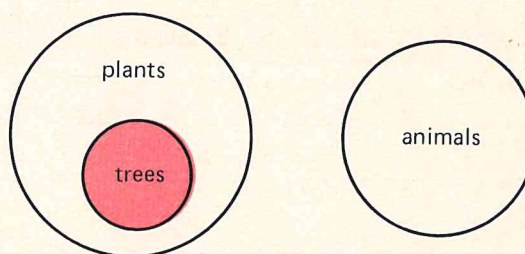
Write All, Some or No.



9. _____ multiples of 9 are multiples of 3.

10. _____ multiples of 3 are multiples of 9.

11. _____ multiples of 9 are prime numbers.



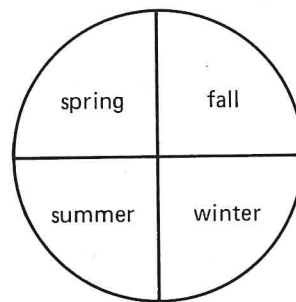
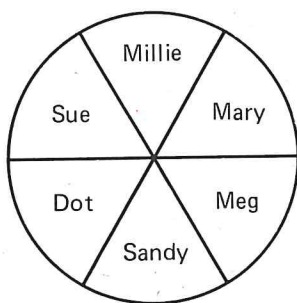
12. _____ trees are plants.

13. _____ plants are trees.

14. _____ plants or trees are animals.

If-then-If not-then

Use the diagrams to help you complete the sentence.



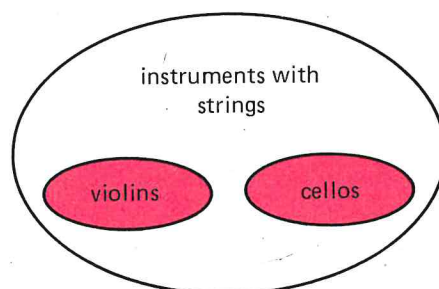
1. If it begins with **S**, then it is
_____ or _____.
2. If it begins with **S** and has a **d** in it,
then it is _____.
3. If it does not begin with **S** or **M**,
then it is _____.
4. If it begins with **M**, then it is
_____, _____,
or _____.

5. If it begins with **S**, then it is
_____ or _____.
6. If it is not summer or winter, then it must
be _____ or _____.
7. If it begins with **S** and ends in **er**, then
it is _____.
8. If it is not spring or fall, then
it is _____ or _____.

Complete the sentences.

9. If your sister is between 8 and 11 years old and she
is not 9, then she is _____ years old.
10. If you name an even number between 12 and 20 and
it is not 16 or 18, then it is _____.

Use the set diagram. Write **T** or **F** to show whether the statement is true or false.



11. If it is a cello, then it has strings. _____
12. If it is a violin, then it is not a cello. _____
13. If it has strings, it may be something other than a violin or cello. _____

chapter 9

Name _____

multiplication, division with fractional numbers

Multiplying a Whole Number and a Fraction

Study the two methods.

A

$$\begin{aligned} 6 \times \frac{2}{3} &= (6 \times 2) \times \frac{1}{3} \\ &= 12 \times \frac{1}{3} \\ &= \frac{12}{3} = 4 \end{aligned}$$

B

$$\begin{aligned} \frac{2}{3} \times 6 &= 2 \times \left(\frac{1}{3} \times 6\right) \\ &= 2 \times 2 \\ &= 4 \end{aligned}$$

Use method A to name the product.

1. $8 \times \frac{3}{4} =$

3. $7 \times \frac{5}{8} =$

5. $4 \times \frac{3}{5} =$

7. $7 \times \frac{3}{7} =$

2. $10 \times \frac{2}{5} =$

4. $8 \times \frac{2}{9} =$

6. $5 \times \frac{3}{8} =$

8. $14 \times \frac{2}{7} =$

Use method B to name the product.

9. $\frac{2}{3} \times 9 =$

11. $\frac{3}{4} \times 12 =$

13. $\frac{4}{5} \times 25 =$

15. $\frac{5}{6} \times 18 =$

10. $\frac{4}{7} \times 28 =$

12. $\frac{3}{8} \times 24 =$

14. $\frac{6}{7} \times 42 =$

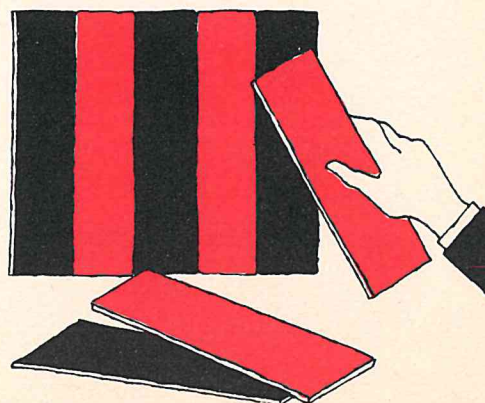
16. $\frac{3}{8} \times 32 =$

Find the total

17. width of eight $\frac{3}{4}$ " boards. -----

18. weight of eight $\frac{7}{8}$ oz. coins. -----

19. length of twelve $\frac{5}{6}$ " tubes. -----



Multiplying Two Fractions — 1 as a Factor

Name the product.

1. $\frac{2}{3} \times \frac{3}{4} =$ -----

3. $\frac{3}{4} \times \frac{4}{5} =$ -----

5. $\frac{1}{2} \times \frac{6}{11} =$ -----

2. $\frac{3}{4} \times \frac{5}{8} =$ -----

4. $\frac{5}{6} \times \frac{2}{3} =$ -----

6. $\frac{3}{4} \times \frac{2}{3} =$ -----

Give the prime factorization of each numerator and denominator.

7. $\frac{6}{12} =$ -----

12. $\frac{4 \times 7}{7 \times 22} =$ -----

8. $\frac{6}{15} =$ -----

13. $\frac{4 \times 9}{15 \times 16} =$ -----

9. $\frac{14}{21} =$ -----

14. $\frac{6}{7} \times \frac{14}{26} =$ -----

10. $\frac{3 \times 6}{6 \times 7} =$ -----

15. $\frac{5}{9} \times \frac{21}{25} =$ -----

11. $\frac{4 \times 9}{5 \times 15} =$ -----

16. $\frac{7}{15} \times \frac{9}{21} =$ -----

Complete the sentence.

17. Multiplying or dividing by ----- does not change a number.

18. When a common factor appears in the numerator and denominator it can
be removed because it is a name for -----.

Write the products in Exercises 9 – 16 in simplest form.

19. -----

21. -----

23. -----

25. -----

20. -----

22. -----

24. -----

26. -----

Name _____

Multiplying Mixed Numerals

Rename as a fraction.

1. $1\frac{3}{4} = \text{-----}$

3. $3\frac{4}{7} = \text{-----}$

5. $4\frac{5}{6} = \text{-----}$

7. $7\frac{3}{8} = \text{-----}$

2. $4\frac{2}{5} = \text{-----}$

4. $3\frac{2}{7} = \text{-----}$

6. $4\frac{3}{4} = \text{-----}$

8. $2\frac{5}{7} = \text{-----}$

To multiply $2\frac{2}{3} \times 3\frac{1}{2}$ we first rename the mixed numerals as fractions.

$$\frac{8}{3} \times \frac{7}{2}$$

Then we multiply. $\frac{8 \times 7}{3 \times 2} = \frac{2 \times 2 \times \overset{1}{\cancel{2}} \times 7}{3 \times \underset{1}{\cancel{2}}} = \frac{28}{3} = 9\frac{1}{3}$

Use the method above to name the product.

9. $3\frac{1}{3} \times 2\frac{1}{2} =$

12. $4\frac{1}{5} \times 3\frac{2}{3} =$

15. $2\frac{1}{4} \times 4\frac{1}{6} =$

10. $4\frac{1}{3} \times 2\frac{1}{4} =$

13. $3\frac{1}{4} \times 2\frac{2}{7} =$

16. $4\frac{2}{3} \times 5\frac{2}{5} =$

11. $5\frac{1}{3} \times 3\frac{3}{4} =$

14. $5\frac{3}{5} \times 2\frac{1}{7} =$

17. $3\frac{3}{7} \times 2\frac{7}{8} =$

Rename as a mixed numeral.

18. $\frac{11}{3} = \text{-----}$

20. $\frac{12}{8} = \text{-----}$

22. $\frac{6}{3} = \text{-----}$

24. $\frac{21}{6} = \text{-----}$

19. $\frac{14}{3} = \text{-----}$

21. $\frac{11}{6} = \text{-----}$

23. $\frac{18}{5} = \text{-----}$

25. $\frac{23}{7} = \text{-----}$

Multiplying with Decimals

Name the products.

1. $\frac{2}{10} \times \frac{3}{10} =$ -----

5. $\frac{3}{10} \times \frac{4}{10} =$ -----

9. $\frac{3}{10} \times \frac{4}{100} =$ -----

2. $.2 \times .3 =$ -----

6. $.3 \times .4 =$ -----

10. $.3 \times .04 =$ -----

3. $\frac{7}{10} \times \frac{8}{10} =$ -----

7. $\frac{7}{10} \times \frac{24}{100} =$ -----

11. $\frac{6}{10} \times \frac{3}{100} =$ -----

4. $.7 \times .8 =$ -----

8. $.7 \times .24 =$ -----

12. $.6 \times .03 =$ -----

13.
$$\begin{array}{r} .6 \\ \times .4 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 5.23 \\ \times .3 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 7.85 \\ \times 23 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 6.72 \\ \times 3.1 \\ \hline \end{array}$$

14.
$$\begin{array}{r} .68 \\ \times .3 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 8.76 \\ \times 5 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 6.97 \\ \times 34 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 4.85 \\ \times 9.3 \\ \hline \end{array}$$

15.
$$\begin{array}{r} .74 \\ \times .4 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 9.34 \\ \times 6 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 8.31 \\ \times 3.5 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 26.75 \\ \times 3.2 \\ \hline \end{array}$$

Estimate the product.

25. 2.3 times 24 -----

30. 2.3 times 5 -----

26. 1.3 times 6.28 -----

31. 1.23 times 8 -----

27. 7.67 times 5 -----

32. 2.73 times 12 -----

28. 6.78 times .9 -----

33. 6.24×2.24 -----

29. 3.35 times 1.65 -----

34. 5.72×3.43 -----

Name _____

Dividing a Fraction by a Whole Number

Complete the division.

1. $\frac{\boxed{}}{2) 4}$ (fifths)
(fifths)

3. $\frac{\boxed{}}{3) 6}$ (sevenths)
(sevenths)

5. $\frac{\boxed{}}{3) 9}$ (elevenths)
(elevenths)

7. $\frac{\boxed{}}{5) 10}$ (elevenths)
(elevenths)

2. $\frac{4}{5} \div 2 =$

4. $\frac{6}{7} \div 3 =$

6. $\frac{9}{11} \div 3 =$

8. $\frac{10}{11} \div 5 =$

9. Remember: Dividing by 3 is the same as multiplying by -----.

10. Remember: Dividing by 8 is the same as multiplying by -----.

11. Remember: Dividing by 4 is the same as multiplying by -----.

12. Remember: Dividing by 5 is the same as multiplying by -----.

13. Remember: Dividing by 2 is the same as multiplying by -----.

To divide $\frac{3}{4}$ by 2 we can multiply $\frac{3}{4}$ by $\frac{1}{2}$; $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

Use the method above to name the quotient.

14. $\frac{3}{4} \div 4 =$

17. $\frac{4}{5} \div 3 =$

20. $\frac{5}{6} \div 4 =$

23. $\frac{7}{8} \div 3 =$

15. $\frac{5}{6} \div 7 =$

18. $\frac{7}{8} \div 5 =$

21. $\frac{9}{10} \div 7 =$

24. $\frac{6}{7} \div 4 =$

16. $\frac{4}{5} \div 5 =$

19. $\frac{7}{8} \div 9 =$

22. $\frac{6}{7} \div 8 =$

25. $\frac{7}{8} \div 4 =$

Division of Decimals — Reciprocals

Name the quotient.

1. $5 \overline{)6.85}$

4. $9 \overline{)3.681}$

7. $4 \overline{)2.96}$

10. $6 \overline{)73.26}$

2. $8 \overline{)3.424}$

5. $4 \overline{)6.948}$

8. $3 \overline{)69.432}$

11. $5 \overline{)8.475}$

3. $23 \overline{)75.9}$

6. $43 \overline{)96.32}$

9. $22 \overline{)55.88}$

12. $63 \overline{)49.77}$

Remember:

Dividing by 4 is the same as multiplying by $\frac{1}{4}$
 4 and $\frac{1}{4}$ are reciprocals. $4 \times \frac{1}{4} = 1$

Dividing by $\frac{2}{3}$ is the same as multiplying by $\frac{3}{2}$
 $\frac{2}{3}$ and $\frac{3}{2}$ are reciprocals. $\frac{2}{3} \times \frac{3}{2} = 1$

Use a reciprocal to help you name the quotient.

13. $7 \div \frac{2}{3} =$

17. $8 \div \frac{3}{4} =$

21. $9 \div \frac{5}{6} =$

25. $7 \div \frac{3}{5} =$

14. $5 \div \frac{2}{5} =$

18. $7 \div \frac{2}{3} =$

22. $8 \div \frac{5}{7} =$

26. $7 \div \frac{3}{8} =$

15. $\frac{7}{9} \div \frac{3}{8} =$

19. $\frac{3}{4} \div \frac{5}{7} =$

23. $\frac{5}{6} \div \frac{3}{4} =$

27. $\frac{6}{7} \div \frac{4}{5} =$

16. $\frac{5}{7} \div \frac{2}{3} =$

20. $\frac{5}{9} \div \frac{3}{4} =$

24. $\frac{7}{8} \div \frac{4}{5} =$

28. $\frac{6}{7} \div \frac{9}{10} =$

To estimate the quotient $.9 \overline{)6.39}$

Think: .9 is about 1. There are about 6 ones in 6.39

Then divide $.9 \overline{)6.39}$

Six is nearer to 7.1 than to 71 or .71 so we place the decimal point after the 7.

In $.23 \overline{)6.90}$

Think: .23 is about $\frac{1}{4}$, $6 \div \frac{1}{4}$ is about 24.

We place the decimal point after the 0.

Divide, then place the decimal point by estimation.

1. $.9 \overline{)3.60}$

2. $.23 \overline{)73.6}$

3. $.33 \overline{)75.9}$

4. $2.9 \overline{)92.8}$

5. To multiply a decimal by 10 we can move the decimal point ----- place to the right.

6. To multiply a decimal by 100 we can move the decimal point ----- places to the right.

7. To multiply a decimal by 1000 we can move the decimal point ----- places to the right.

To divide $.23 \overline{)73.60}$ we can multiply both parts by 100 to make the divisor a whole number. Then divide $23 \overline{)7360}$

Use the method above to name the quotient.

8. $.12 \overline{)1.56}$

11. $.7 \overline{)2.94}$

14. $.36 \overline{)7.56}$

17. $2.6 \overline{)83.72}$

9. $.45 \overline{)97.65}$

12. $4.8 \overline{)56.64}$

15. $.37 \overline{)31.82}$

18. $6.5 \overline{)76.05}$

10. $.26 \overline{)12.22}$

13. $3.8 \overline{)212.8}$

16. $9.3 \overline{)697.5}$

19. $.84 \overline{)57.96}$

Probability

Use the set below to help you answer each question in fraction form.



1. What is the probability of selecting a gray region?
2. What is the probability of selecting a red region?
3. What is the probability of selecting neither a red nor gray region?
4. What is the probability of selecting either a red or gray region?
5. What is the probability of selecting a square region?

Use the sets below to help you answer each question in fraction form.



6. What is the probability of selecting a gray region from each set?
7. What is the probability of selecting a white region from each set?
8. What is the probability of selecting a red region from each set?
9. What is the probability of selecting a white circular region and a gray square region?
10. What is the probability of not selecting a white region from either group?

Solve the problem.

11. Bill has a bag of marbles. If there are 15 red marbles, 20 black ones, and 10 white ones, what is the probability of picking out a

red marble? a white marble?

a black marble? a blue marble?



chapter 10

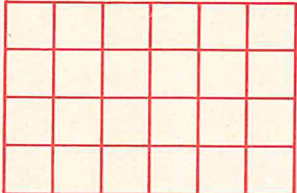
geometry

Name _____

Review — Circumference

Name a unit you can use to measure each.

1.  _____

2.  _____

3.  _____

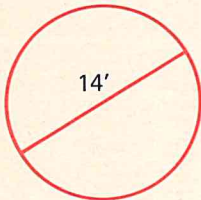
4.  _____

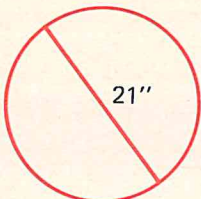
5. The *circumference* of a *circle* is about _____ times the length of the diameter.

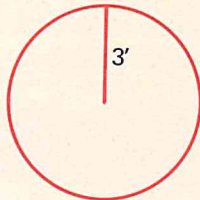
6. The value of π is about _____.

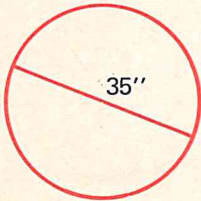
7. To find the circumference of a circle we multiply _____.

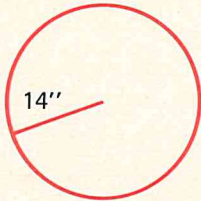
Find the circumference of each circle.

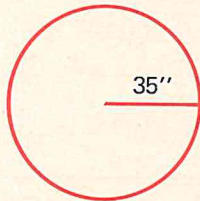
8.  _____

10.  _____

12.  _____

9.  _____

11.  _____

13.  _____

Just for Fun

14. In the formula $C = \pi \times d$ we could replace d with _____.

15. Another way to write the formula $C = \pi \times d$ is $C = \pi \times \text{_____} \times \text{_____}$.

Angles — Parallel

1. Draw two lines that are parallel.
2. Label the \overline{AB} on one and \overline{CD} on the other.
3. Draw a line that is *perpendicular* to \overline{AB} and intersects both lines.
4. Label \overline{FG} on the perpendicular line.
5. What is the measure of the angles where \overline{FG} intersects \overline{AB} ? where \overline{FG} intersects \overline{CD} ?
6. If two lines intersect and the angles are 90° , the lines are
7. Line CD is perpendicular to line

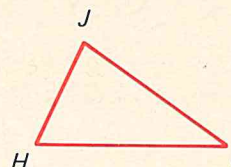
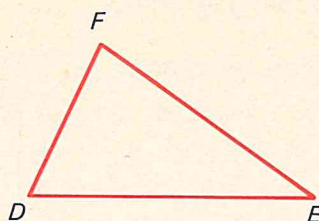
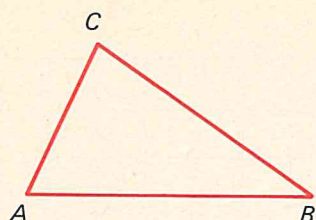
Complete the table.

	Figure	Angle 1	Angle 2	Angle 3	Angle 4
8.	triangle	45°	45°		None
9.	triangle	60°	80°		None
10.	quadrilateral	80°	60°	120°	
11.	quadrilateral	70°	80°	100°	
12.	rectangle				

13–17. Draw the figures described in Exercises 8–12.

Name _____

Congruent Angles



Name the measure of the angles.

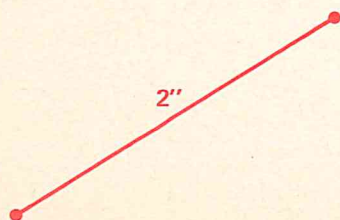
- | | | |
|-------------------------------|-------------------------------|-------------------------------|
| 1. $\angle ABC$ degrees | 4. $\angle DEF$ degrees | 7. $\angle HIJ$ degrees |
| 2. $\angle BCA$ degrees | 5. $\angle DFE$ degrees | 8. $\angle IJH$ degrees |
| 3. $\angle CAB$ degrees | 6. $\angle EDF$ degrees | 9. $\angle JHI$ degrees |

Complete the sentences. Study the Exercises 1–9 if you need to.
Name the congruent angles.

10. _____, _____ and _____ 11. _____, _____ and _____ 12. _____, _____ and _____
13. If the angles are the same are the triangles *congruent*? _____
14. If two triangles are congruent they must have matching angles of the same
measurement and _____ measurement.
- *15. If the matching sides are not the same length but the matching angles are the same
we say the triangles are _____.

Use your protractor to draw two congruent triangles. Use the line segment as one side.

16.



17.



Number Planes

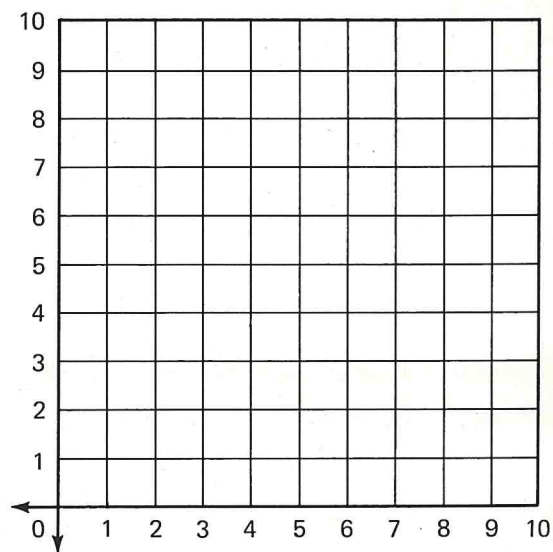
On the number plane draw a polygon using points

1. $A (4, 7)$, $B (7, 4)$, and $C (4, 0)$ as vertexes.
2. $D (1, 8)$, $E (4, 5)$ and $F (1, 1)$ as vertexes.

Name the congruent segments.

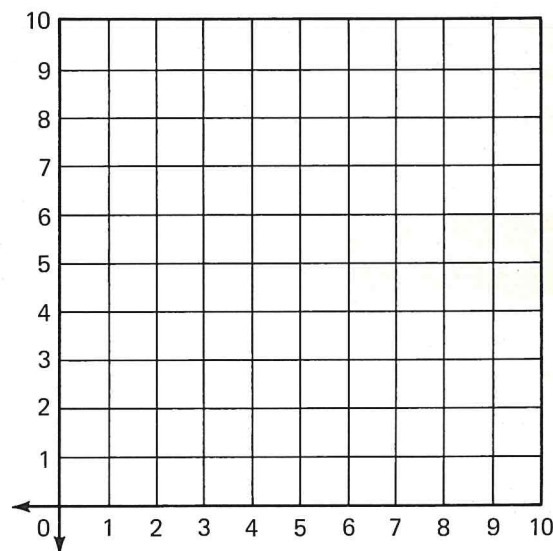
3. \overline{AB} is congruent to
4. \overline{BC} is congruent to
5. \overline{AC} is congruent to

6. Write the rule for moving shape ABC to shape DEF .



Locate and label the point as shown.

- | | | |
|---------------|------------|------------|
| 7. $U (2, 2)$ | $T (5, 5)$ | $N (3, 3)$ |
| $I (6, 6)$ | $F (1, 1)$ | $C (4, 4)$ |
| $O (7, 7)$ | $N (8, 8)$ | |



- *8. Can you write the function equation for the graph?

Name _____

Ratio — Similar Polygons

Name the ratios.

1. 1 quart to 1 gallon -----
2. 1 foot to 1 yard -----
3. 1 minute to 1 hour -----
4. 1 month to 1 year -----
5. 1 inch to 1 foot -----
6. 1 inch to 1 yard -----
7. 1 hour to 1 day -----
8. 6 inches to 1 yard -----
9. 1 cup to 1 quart -----
10. 1 pint to 1 gallon -----
11. 2 days to 1 week -----
12. 1 centimeter
to 1 meter -----

Write equal ratios by completing the equation.

13. $\frac{5}{6} = \frac{\square}{18}$

14. $\frac{7}{8} = \frac{\square}{16}$

15. $\frac{4}{5} = \frac{16}{\square}$

16. $\frac{2}{3} = \frac{8}{\square}$

Name the measures for two other similar triangles.

Triangle

17. Side *A* - 3
Side *B* - 5
Side *C* - 5

Similar triangle 1

- Side *A* -----
Side *B* -----
Side *C* -----

Similar triangle 2

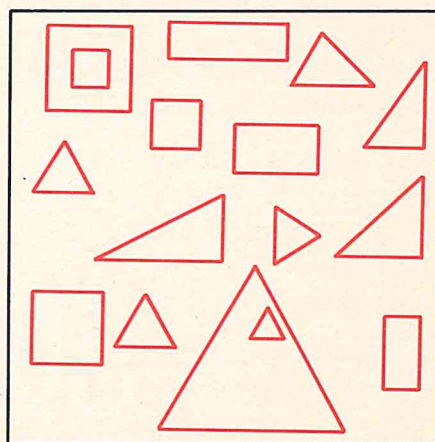
- Side *A* -----
Side *B* -----
Side *C* -----

Write *T* or *F* to tell whether the statement is true or false.

18. All rectangles are similar. -----
19. All equilateral triangles are similar. -----
20. All squares are similar. -----
21. All triangles are similar. -----
22. All right triangles are similar. -----

Complete the sentences.

23. If $\frac{1}{8}$ " represents 3 feet, $\frac{5}{8}$ " represents ----- feet.
24. If $\frac{1}{2}$ " represents 10 miles, 4" represents ----- miles.
25. If $\frac{1}{6}$ " represents 100 feet, $\frac{5}{6}$ " represents ----- feet.





Bar Graphs

Make a bar graph to show the information.

Day	Number of lunches
1. January 4	145
January 5	165
January 6	155
January 7	160
January 8	150
January 9	160

2. On what day were the most lunches

served? fewest?

Show one set of information with . Show the other set of information with .

3. Points scored on the first four games last year.

Game **1** — 20

Game **2** — 18

Game **3** — 22

Game **4** — 24

4. Points scored on the first four games this year.

Game **1** — 18

Game **2** — 24

Game **3** — 26

Game **4** — 30

5. Did the scores improve this year?

6. Why do you think double bar graphs are used to show information?

.....

.....

Name _____

Area — Perimeter

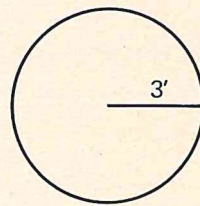
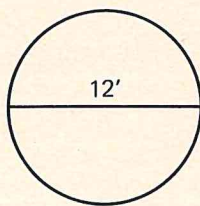
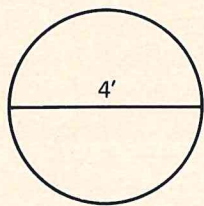
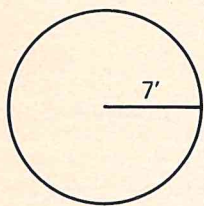
Write *area* or *volume* in the space to tell which measure you use when you buy

1. carpeting. _____ 3. floor tile. _____ 5. gas. _____
2. paint. _____ 4. milk. _____ 6. linoleum. _____

Write the formula for the

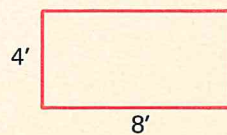
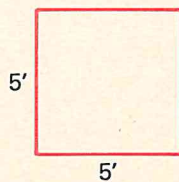
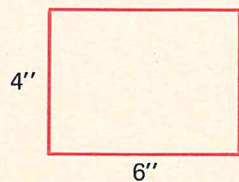
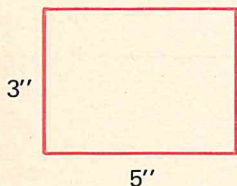
7. area of a square. _____ 9. perimeter of a square. _____
8. area of a triangle. _____ 10. area of a rectangle. _____

Name the area of each circle.



11. Area _____ 12. Area _____ 13. Area _____ 14. Area _____

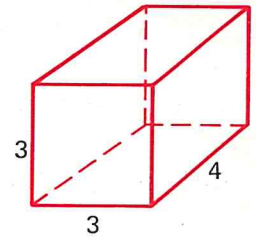
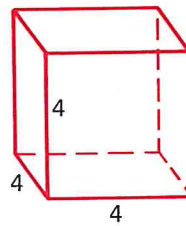
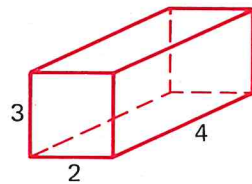
Name the area and perimeter of each figure.



15. Area _____ 17. Area _____ 19. Area _____ 21. Area _____
16. Perimeter _____ 18. Perimeter _____ 20. Perimeter _____ 22. Perimeter _____

Area — Volume

Name the surface area and the volume for each closed surface.



Surface area

1. _____

3. _____

5. _____

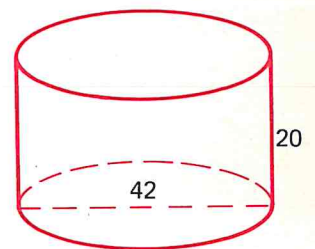
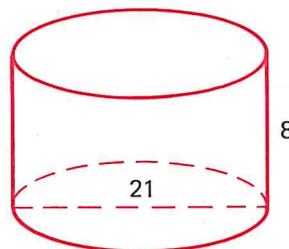
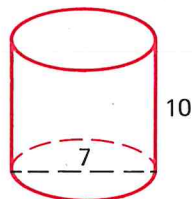
Volume

2. _____

4. _____

6. _____

Name the area of the base and the volume for each cylinder.



Area of base

7. _____

9. _____

11. _____

Volume

8. _____

10. _____

12. _____

chapter 11

Name _____

different ways with numbers, integers

Kinds of Numbers

Name the set of numbers that

1. are multiples of two. {_____}
2. end in five or zero. {_____}
3. never result in an even number when multiplied. {_____}
4. are multiples of 2 and 3. {_____}
5. have only two factors. {_____}
6. have 9 or a multiple of 9 as the sum of the digits. {_____}
7. can be represented in rows with the same number of objects in each row and column. {_____}

List the set described.

8. Primes less than 20. {_____}
9. Multiples of 7. {_____}
10. Factors of 48. {_____}
11. Even numbers less than 10. {_____}
12. Multiples of eleven less than 75. {_____}

Division of Decimals

Study the samples, then name the quotient.

$$\frac{9}{10} \div 3 = \frac{9}{10} \times \frac{1}{3} = \frac{3}{10} = .3$$

$$\begin{array}{r} .3 \\ 3 \overline{)9} \end{array}$$

$$12\frac{8}{10} \div 4 = \frac{128}{10} \times \frac{1}{4} = \frac{32}{10} = 3.2$$

$$\begin{array}{r} 3.2 \\ 4 \overline{)12.8} \end{array}$$

1. $2\frac{1}{10} \div 3 = \frac{\square}{10} \times \text{-----} = \frac{\square}{10} = \text{-----}$

5. $3 \overline{)42.9}$

2. $3 \overline{)2.1}$

6. $5 \overline{)37.5}$

3. $\frac{24}{100} \div 4 = \frac{24}{100} \times \text{-----} = \frac{\square}{100} = \text{-----}$

7. $23 \overline{)105.8}$

4. $4 \overline{)24}$

8. $42 \overline{)137.34}$

Name the average of the set of numbers.

9. {2.2, 4.6, 9.5, 8.4, 7.3, 6.4} Average -----

10. {4, .9, .6, 7.4, 8.3, 2.8} Average -----

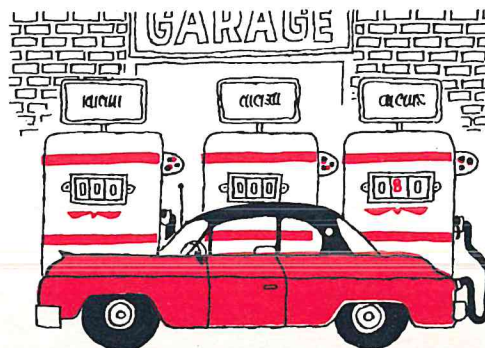
11. {28.2, 74.6, 39.9, 84.2, 74.6} Average -----

12. {3.7, 4.5, 9.6, 8.8, 43.9} Average -----

Name the amount.

13. Jim travels 145.6 miles on 8 gallons of gas. How many miles is that per gallon? -----

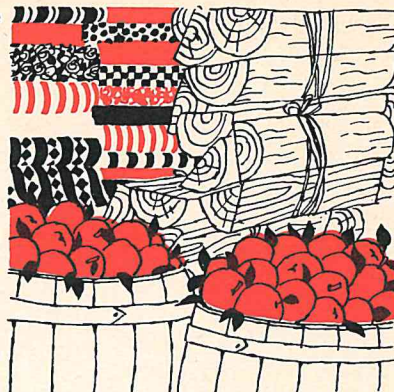
14. If he traveled 212.8 miles in 4 hours, how many miles is that per hour? -----



Name _____

Division with Decimals

Here are a few exercises your great-great-grandparents may have found in their mathematics textbook. Can you solve them?



1. How many barrels of apples, at \$1.35
per barrel, can be bought for $\$21.93\frac{3}{4}$? -----

2. How many cords of wood, at $\$5.87\frac{1}{2}$ per
cord, can be bought for $\$1921.12\frac{1}{2}$? -----

3. How many yards of cloth, at \$5.75 per
yard, can be bought for \$199.525? -----

4. Divide 11.907 by .245

5. Divide .4022676 by .5321

Why do you think your textbooks today do not have exercises with as many decimal places as there are in Exercise 5?

Percent

Write the ratio as a percent.

1. 3 out of 5

2. 7 out of 8

3. 25 out of 40

4. 16 out of 64

5. $\frac{3}{10}$

6. $\frac{7}{25}$

7. $\frac{14}{50}$

8. $\frac{9}{20}$

Change the percent to a decimal, then name the product.

9. $40\% \times 56$

10. $38\% \times 87$

11. $43\% \times 72$

12. $88\% \times 34$

Change the percent to a fraction, then name the product.

13. $80\% \times 62$

14. $15\% \times 85$

15. $45\% \times 400$

16. $3\% \times 150$

Name _____

Introducing Integers

Write *yes* or *no* to tell whether you can solve each equation if the replacement set is {whole numbers}.

1. $n - 3 = 4$ _____

4. $3 \times y = 9$ _____

2. $3 - n = 4$ _____

5. $8 + m = 11$ _____

3. $2 \times x = 3$ _____

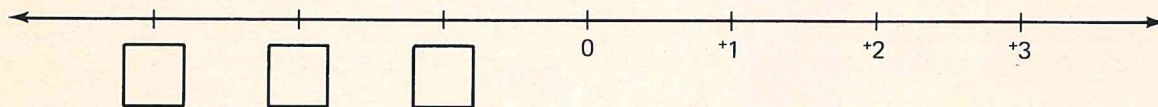
6. $8 + m = 6$ _____

Record the final temperature.

	Temperature	Rise	Fall	Final temperature
7.	13° above 0		14°	_____
8.	16° above 0		12°	_____
9.	13° below 0	10°		_____
10.	4° below 0	15°		_____
11.	16° above 0		23°	_____

Name the points on the number line.

12–14.



Answer the question.

15. Is zero positive or negative? _____

16. Except for zero is there a positive number to match each negative number? _____

17. Are the matching numbers the same distance from zero? _____

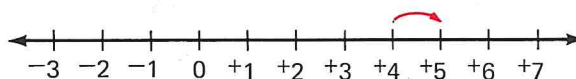
18. What is the point halfway between 0 and -1? _____

19. What is the point halfway between -1 and -2? _____

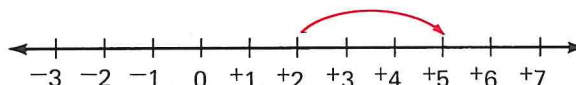
Adding Integers — Fraction Review

Name the sum.

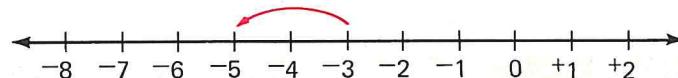
1. $+4 + +1 =$



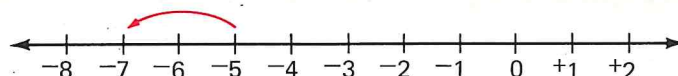
2. $+2 + +3 =$



3. $-3 + -2 =$



4. $-5 + -2 =$



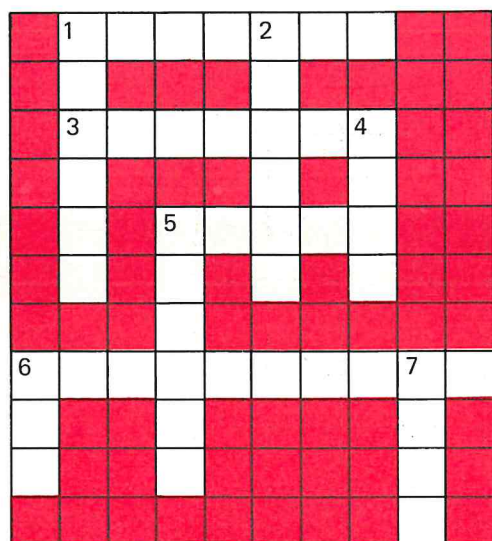
Complete each set of number pairs using the function rule.

5. add $+3$ $\{(+4, \text{.....}), (+3, \text{.....}), (+2, \text{.....}), (+1, \text{.....}), (0, \text{.....}), (-1, \text{.....})\}$

6. add -4 $\{(+2, \text{.....}), (+1, \text{.....}), (0, \text{.....}), (-1, \text{.....}), (-2, \text{.....}), (-3, \text{.....})\}$

7. add $+2$ $\{(+1, \text{.....}), (0, \text{.....}), (-1, \text{.....}), (-2, \text{.....}), (-3, \text{.....}), (-4, \text{.....})\}$

Use the word name for each number.



ACROSS

1. Another name for 1 is four-.....

3. The LCM of 3 and 5 is

5. $\frac{1}{2} =$ -fourteenths.

6. One-half = eight-.....

DOWN

1. $\frac{6}{10} =$ three

2. The LCM of 6 and 4 is

4. $\frac{3}{4} =$ -twelfths.

5. To add thirds and halves we rename the addends as

6. The LCM of 2 and 3 is

7. The simplest name for $\frac{5}{10}$ is one

Name _____

Subtracting Integers

Name the difference.

1. $+3 - -5 =$ _____

2. $+7 - -3 =$ _____

3. $-3 - -6 =$ _____

4. $+4 - +3 =$ _____

5. $+6 - -5 =$ _____

6. $-7 - -2 =$ _____

7. $+6 - -3 =$ _____

8. $-8 - -2 =$ _____

9. $+1 - -3 =$ _____

10. $-8 - +8 =$ _____

11. $-9 - -4 =$ _____

12. $+7 - -9 =$ _____

13. $+4 - +6 =$ _____

14. $+1 - +8 =$ _____

15. $+8 - +7 =$ _____

16. $+9 - +13 =$ _____

17. $-10 - +4 =$ _____

18. $+6 - -13 =$ _____

19. Can you select any two numbers and subtract them using the set of integers? _____

20. The set of _____ is closed for subtraction.

Complete the puzzle using base eight numerals.

ACROSS

3. Months in a year _____eight

4. Weeks in a year _____eight

5. $33_{\text{ten}} =$ _____eight

7. Days in three weeks _____eight

11. Weeks in half a year _____eight

13. Days in six weeks _____eight

	1		2	
3			4	
	5	6		
		7	10	
11	12		13	

DOWN

1. Years in a century _____eight

2. Days in June _____eight

6. Years in a decade _____eight

10. Days in a year _____eight

12. Days in three weeks _____eight

Just for Fun

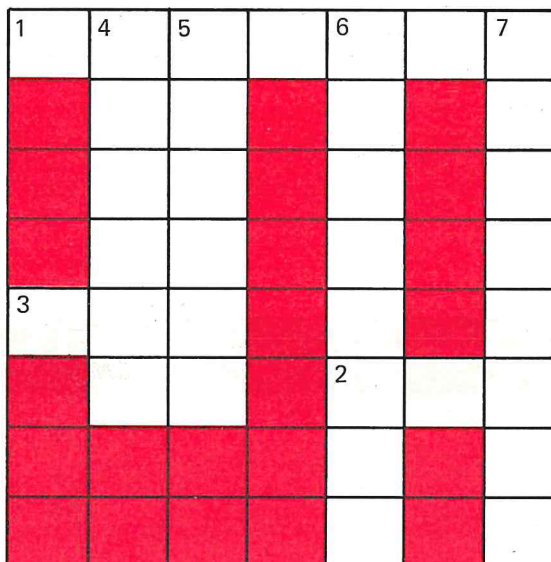
Solve the crossword puzzle.

ACROSS

1. May be positive or negative
2. The same as 2000 pounds
3. It means rate

DOWN

4. Shown by a numeral
5. An idea
6. Study of points
7. Comes from the word ratio



Jack decided to put Roman numerals in his report. Can you answer the questions using our numerals?

On June XIV there were XXXVII of us who took a IX o'clock bus to the city. We watched a parade in which CCCLXV people took part. VIII bands, XVI floats, and XXVI horses passed by. After eating a XCIX cent lunch, we went to the ball game. MDCL people saw the home team win.

8. On what day did Jack's friends go to the city?
9. How many went?
10. What time did the bus leave?
11. How many people were in the parade?
12. How many bands were there?
13. How many floats were there?
14. How many horses were in the parade?
15. How much did lunch cost?
16. How many people were at the ball game?

Student Text and Workbook Correlation Chart

Workbook Page	Text Pages	Workbook Page	Text Pages	Workbook Page	Text Pages
1	1-3	33	110-111	65	228-229
2	4-5	34	112-117	66	230-231
3	6-7	35	118-121	67	232-233
4	8-9	36	122-125	68	234-237
5	10-11	37	126-127	69	238-241
6	12-15	38	128-131	70	242-249
7	16-17	39	132-137	71	250-253
8	18-21	40	138-139	72	254-259
9	22-25	41	140-145	73	260-261
10	26-31	42	146-149	74	262-265
11	32-33	43	150-151	75	266-269
12	34-35	44	152-157	76	270-275
13	36-41	45	158-159	77	276-277
14	42-43	46	160-161	78	278-279
15	44-47	47	162-165	79	280-291
16	48-49	48	166-169	80	292-295
17	50-53	49	170-173	81	296-297
18	54-55	50	174-175	82	298-299
19	56-63	51	176-179	83	300-305
20	64-65	52	180-185	84	306-307
21	66-67	53	186-191	85	308-312
22	68-69	54	192-193	86	312-313
23	70-71	55	194-197	87	314-317
24	72-79	56	198-199	88	318-319
25	80-81	57	200-203	89	320-321
26	82-85	58	204-209	90	322-323
27	86-89	59	210-211	91	324-326
28	90-95	60	210-211	92	326-327
29	96-99	61	212-217	93	328-329
30	100-101	62	218-223	94	330-332
31	102-107	63	224-225		
32	108-111	64	226-227		



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